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"FLIGHT" PHOTOGRAPHS

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2.

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1928

July 19 Air Display at Colchester
 July 20-21 King's Cup Race and Siddeley Trophy Tour, Hendon and (finish) Brooklands
 July 20-22 Light Plane Meeting at Rotterdam
 July — Aerial Derby
 Aug. 4 Close of Philadelphia Bulletin Atlantic Flight Prize
 Aug. 6 Air League Challenge Cup, Norwich
 Aug. 27-31 U.S. National Baby 'Plane Meeting, Milwaukee
 Oct. 7-28 International Aircraft Exhibition, Berlin
 Oct. 8 Aero Golfing Soc.—Team Match v. Stage G.C.
 Oct. 24 Aero Golfing Soc.—"Cellon" Challenge Cup

1929

Oct. 31 Guggenheim Safe-Aircraft Competition Closes

EDITORIAL COMMENT



If the Paris Aero Show of 1928 does not present any startlingly brilliant innovations, it can at least be said of it that it is a Show devoid of "freaks." There was a time when one might always count on some very unorthodox designs making their appearance in the Grand Palais, usually for the first and last time. This year design appears to be settling down along fairly well-defined lines, although there is still a diversity of types among which it is impossible to say that this or that preponderates to any marked extent. One still sees the "full" biplane, the sesquiplane, the low-wing monoplane, the high-wing monoplane, and occasionally the "normal" monoplane, *i.e.*, with wing about halfway up the sides of the fuselage. If any one type appears to be making headway it is the high-wing monoplane, which one finds employed on machines of widely different classes, from the small commercial or "feeder line" machine, to the large night bomber. Whether this wing arrangement has come to stay, or is merely a passing phase, is difficult to say. Aerodynamically there is very little to choose between one arrangement and another, and ultimately the choice of wing arrangement will be decided by practical considerations. Downward view is one of the advantages of the high-wing monoplane, but in a service machine the forward and upward view is probably less good than that obtained with certain biplane arrangements.

Structural design has not changed much since the last Paris Show, at least as regards French machines. Duralumin is still by far the most popular material for metal construction, and as we have pointed out on previous occasions, this is but natural in view of the fact that France has available large supplies of aluminium from which to make the alloy. When it comes to the manner of using the material, it cannot be said that French designers reach the same degree of refinement as do British. Plain box spars of rectangular section with the corners rounded are employed in very many cases. In others the "box" section is built up from webs and flanges joined by

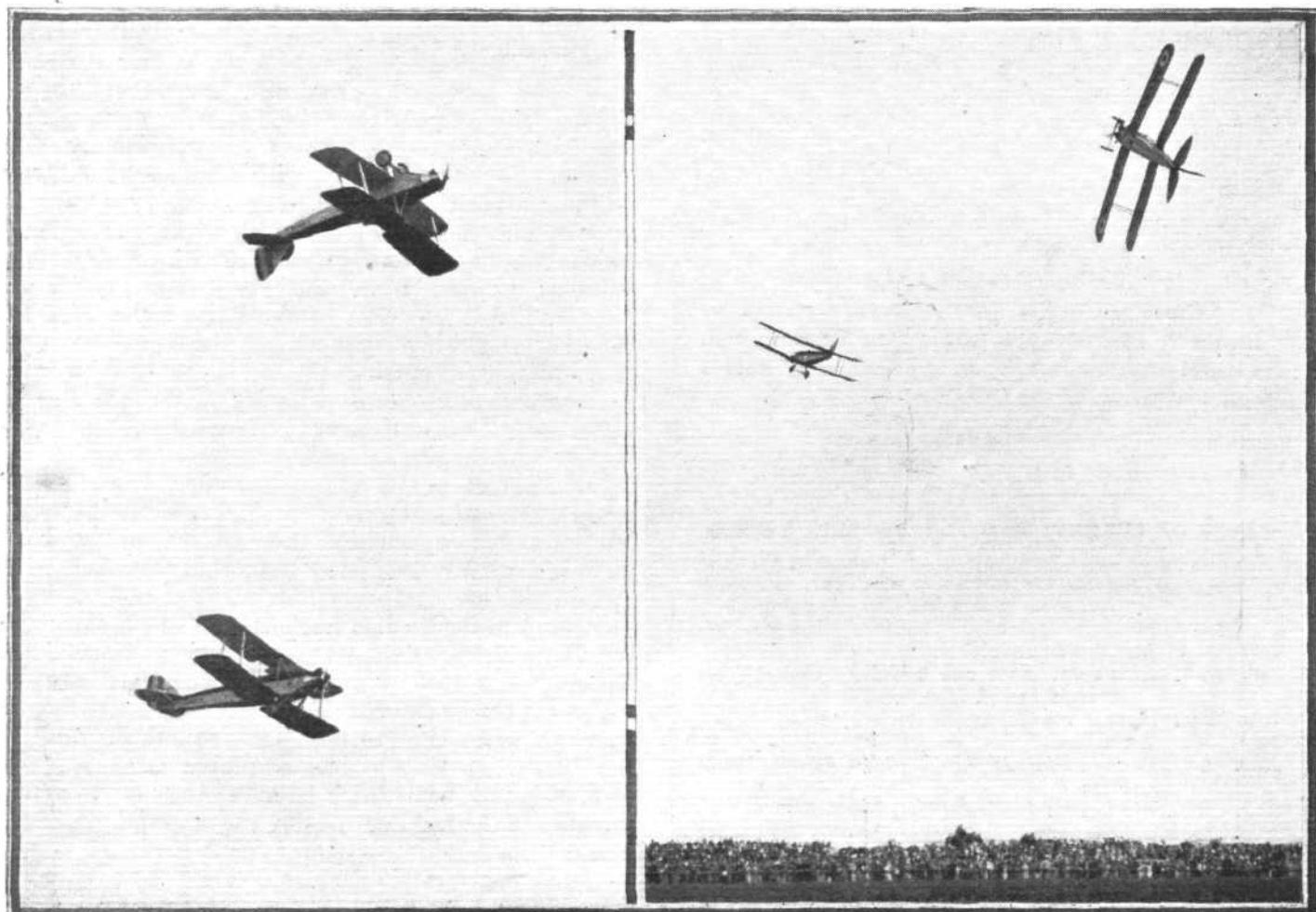
angle sections, but the material is still left quite flat. Michel Wibault shows certain new forms of construction composed in the main of the use of a relatively small number of standardised extruded sections, put together much after the manner of the well-known "Meccano" toy. In nearly all cases, however, simplicity is obviously the aim, and not ultra-efficiency. That the forms of construction are such that quite obviously the full strength of the material cannot be realised is probably as well known to French designers as to us, and their adherence to the simpler form must, therefore, be ascribed to a desire to retain simplicity.

In this country we have during the last four or five years produced metal spars of very high structural efficiency, developing the full strength of the steel from which the spars were made. Much the same applies to fuselage construction. The French argument appears to be that it is better to use forms of construction which can be rapidly produced, by almost anyone, in time of war. There is much to be said for both viewpoints, and certainly a very good case could be made out for the French system. That it is not likely to be generally shared in this country does not really affect the argument. It is a viewpoint, and a perfectly defensible one. We are, of course, well aware that there are possibilities of combining the two policies—to attain almost the full efficiency of the material without necessarily increasing production costs or losing the simplicity of manufacture. With proper plant it has been shown that production of what may appear a more complicated form of construction may be quite cheap. The point to bear in mind is, we think

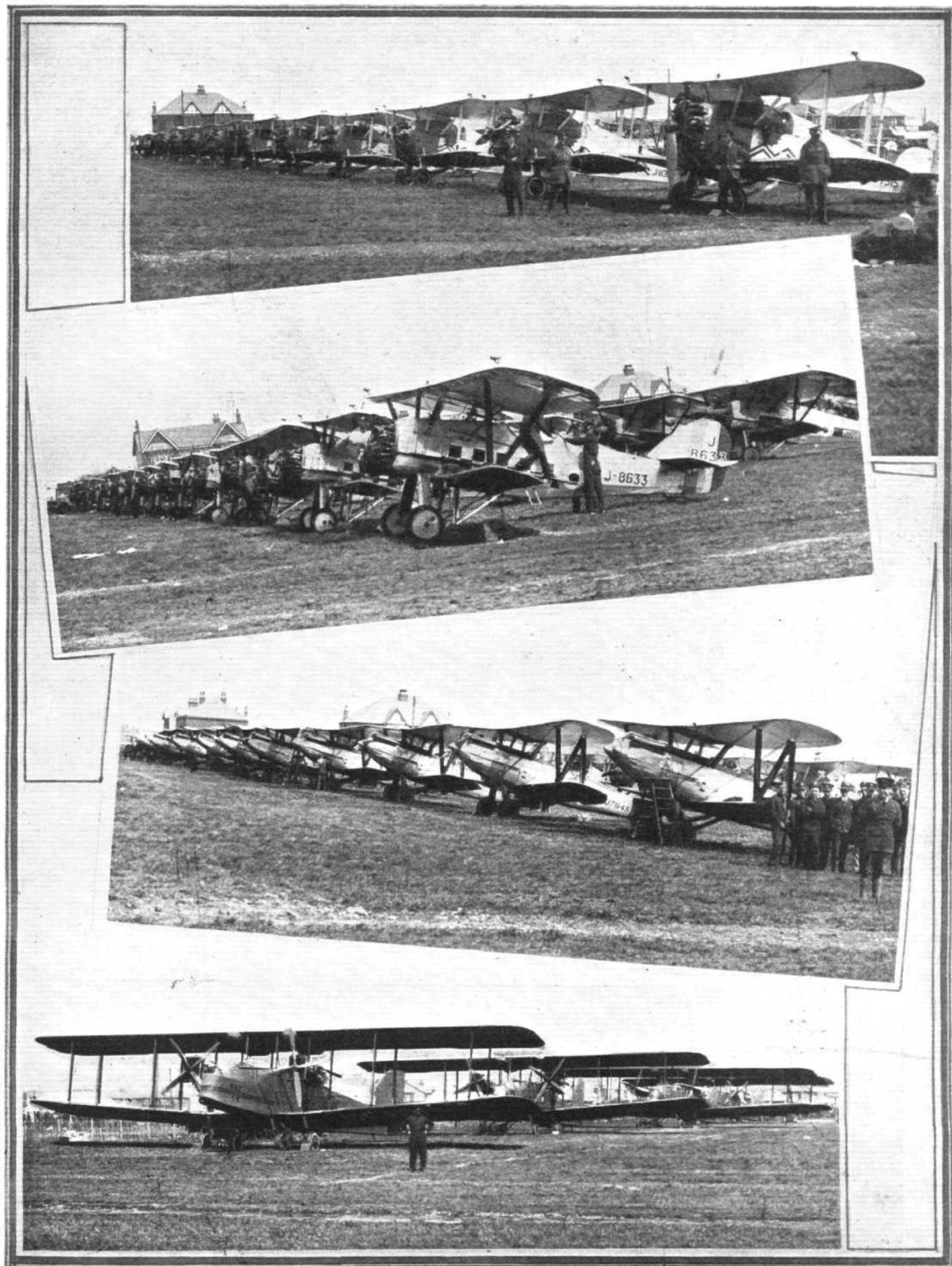
that some of the French forms of metal construction appear capable of production without any plant whatever. By this we mean that the user of the material leaves it to the manufacturer of the material to produce such few sections as are required, and then merely puts the sections together by hand, either by bolting or by riveting.

The subject is one of considerable interest, but, as we hope to publish in the next issue of *THE AIRCRAFT ENGINEER* an article by Mr. Pollard on metal construction at the Paris Show, we do not propose to pursue the arguments here. What we are mainly concerned to show is that one should be careful not to criticise hastily forms of construction which may appear to us less refined than those to which we have become accustomed. The French designer lives and works under conditions very different from those of his "opposite number" in England, and without a full appreciation of this fact one has not the common basis upon which to judge and to compare. Also, those belonging to what may perhaps be termed the "crinkled" school should bear in mind that Duralumin is used in thicker gauges than is our high-tensile steel, and this fact can, and doubtless will, be used by adherents to the "flat school" as an argument in favour of the simpler forms.

A number of French firms using interesting methods of metal construction are absent from the Show this year, and thus there is not such a full opportunity for comparison as there might have been. But, generally speaking, French construction is evidently settling down to a steady policy of a simple and cheap use of Duralumin.



EMULATION : (Left) The two Genet-Moths piloted by Flying Officers Boyle and Atcherley in opposite positions ; and (right) performing their remarkable slow rolls very low across the Blackpool aerodrome.



["FLIGHT" Photographs

R.A.F. DISPLAY AT BLACKPOOL : The huge crowd that visited the Blackpool Air Pageant on July 7 were lucky witnesses of a splendid imitation of the R.A.F. Display at Hendon. These views show the familiar Air Force machines of four classes which took part. (Reading from Top) Hawker "Woodcocks," Armstrong-Whitworth "Sisks," Fairey "Foxes," and Handley-Page "Hyderabads."

BLACKPOOL AIR PAGEANT

THE Air Pageant at Squires Gate, Blackpool, started on Friday, July 6, in temporary chaos owing to a minor gale which even threatened the machines picketed down in the machine parks. Quite early in the morning an Avro "Avian" belonging to the Liverpool Club was blown on its back after landing, causing damage to the propeller, rudder and top centre plane. These adverse conditions led to an order banning amateur pilots from flying, and the balloon bursting competition, scheduled to start the meeting, was, of course, out of the question. The wind was reckoned to be nearly 50 m.p.h., and when flying did commence towards noon the landings of the machines produced excitement amongst the spectators. It required considerable skill and luck to put the wheels on the deck instead of the wings. When a Westland "Widgeon" monoplane started in the first race it almost lifted off from the starting position.

Owner Pilots' Handicap Race.—

The first heat of this event commenced the meeting. It was a duel between Mr. Norman Jones on his D.H. "Moth" "WI" (Cirrus) and Mr. Harold Brooklyn on his Westland "Widgeon" "RQ" (Genet), two experienced pilots, who (although private owners) did not come under the ban. Mr. Jones, won at a speed of 77 m.p.h. He covered the 14½ miles course in 11 mins. 43 secs., starting 1 min. 3 secs. before Mr. Brooklyn, whose time was 10 mins. 42 secs., and speed 84 m.p.h.

Heat 2.—The order of starting was Miss W. S. Brown

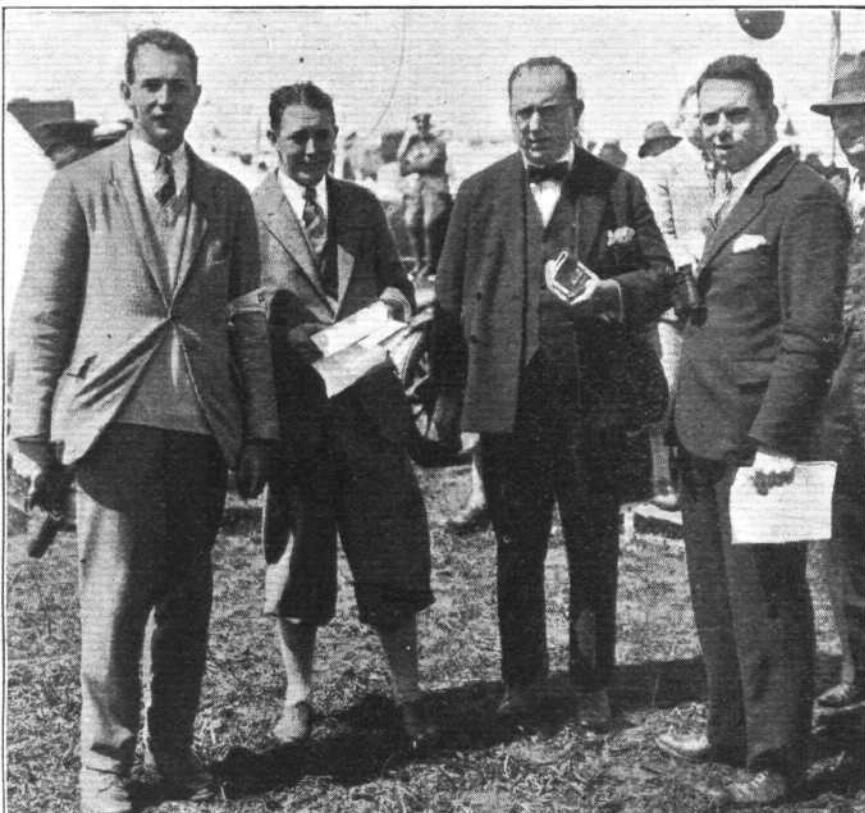
on her Avro "Avian" "VZ," Flight-Lieut. F. O. Soden on his "Genet-Moth" "OU," and Flight-Lieut. Rose on Mr. Cazalet's Westland "Widgeon" "RM." This was another close race, which went to Flight-Lieut. Soden; speed 91½ m.p.h., time 9 mins. 52 secs. Miss Brown was second at a speed of 85 m.p.h., time 10 mins. 33 secs.; and Flight-Lieut. Rose third at a speed of 92½ m.p.h.; time, 9 mins. 43 secs.

Blackpool Business Houses and Hotels Nomination Handicap.—

The weather causing a postponement of an inter-club relay race, the first heat of the Blackpool Nomination Handicap over the course of 14½ miles was run. Order of starting was Capt. Beck on Blackburn "Bluebird" "TB" (handicap allowance 1 min. 57 secs.), Mr. Hall on Avro "Avian" "RR" (1 min. 0.02 sec.), Mr. Ellis on D.H. "Moth" "PT" (0.52 sec.), Sqdn.-Leader J. Noakes on Avro "Avian" "YN" (0.49 sec.), and Capt. Brown on Avro "Avian" "YA" (0.43 sec.). Mr. Hall won on "RR" at 86 m.p.h. in 10 mins. 27 secs. Capt. Brown was second on "YA" at 87 m.p.h. in 10 mins. 19 secs., and Capt. G. R. Beck on "TB" third at 73½ m.p.h. in 12 mins. 15 secs.

Mr. Ellis on "PT" actually passed the finishing line first, but was disqualified for not turning a point properly. Sqdn.-Leader Noakes, on the Avro "Avian," landed for some reason soon after starting in the race.

Heat 2.—Order of starting was Capt. Stockbridge on Blackburn "Bluebird" "TC" (handicap allowance 1 min.



[*"FLIGHT" Photograph*

BLACKPOOL AIR PAGEANT: This group of organisers of the meeting at Squires Gate had a strenuous time in their anxiety to control events to please everybody, and they have the satisfaction of having succeeded. (Left to Right) Mr. A. Goodfellow (Clerk of Course), Mr. Dobson (Marshal), Alderman J. Potter, J.P. (Judge) and Sqdn.-Ldr. Rollo de Haag Haig (Judge).



[*"FLIGHT" Photograph*

BLACKPOOL: General View of the Machine Park, with the private light aeroplanes in the foreground, of which there were about 50, and the Royal Air Force machines, which included night bombers, day bombers and single-seater fighters, in the distance.

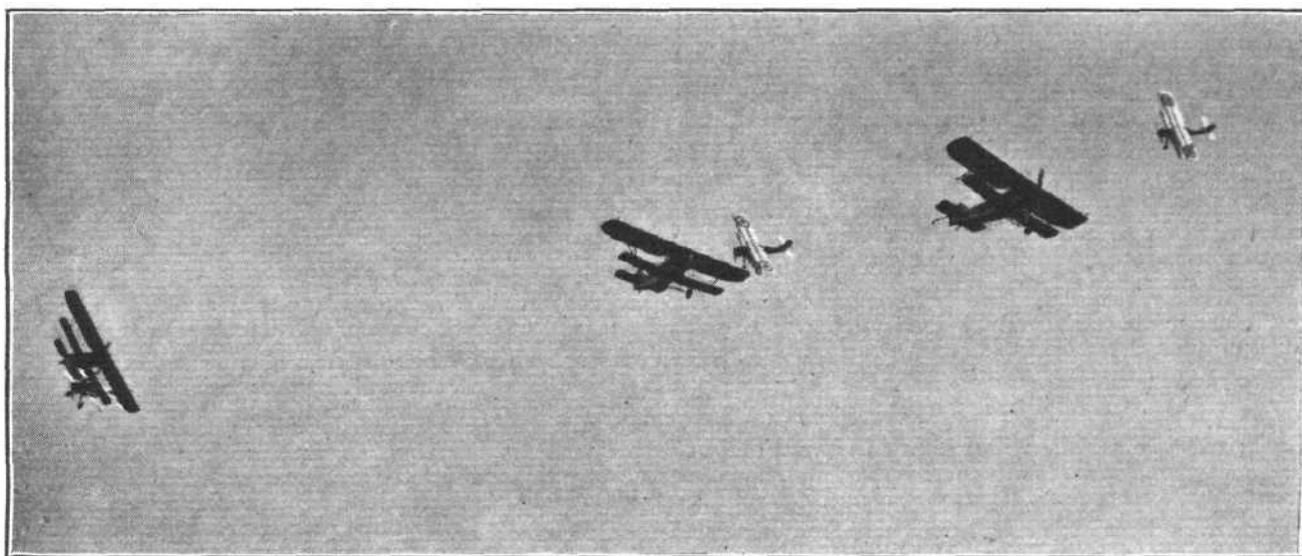
57 secs.), Flight-Lieut. Oliver on Avro "Avian" "YM" (0.49 sec.), Maj. Cordes on D.H. "Moth" "XG" (0.43 sec.), Flight-Lieut. Bonham Carter on the Parnall "Imp" "TE" (0.07 sec.), and Flying Officer Thorne on Avro "Avian" "QN" (scratch). Bonham Carter on the "Imp" won at 96 m.p.h. in 9 mins. 22 secs.; Thorne on the "Avian" was second at 97 m.p.h. in 9 mins. 18 secs.; and Oliver third at 89 m.p.h. in 10 mins. 0.08 sec.

Between these races balloon bursting by various pilots was scheduled to take place, but had to be cancelled for the time being owing to the prevailing high winds.

Blackpool Nomination Handicap (Final).—In the final of this event, Flight-Lieut. Bonham Carter won on the Parnall "Imp" (Genet) at a speed of 100 m.p.h. in 9 mins. 00 secs. Mr. Hall on the Avro "Avian" "RR" was second, speed 91 m.p.h. and time 9 mins. 56 secs.; whilst the third man home was Flight-Lieut. Oliver on Avro "Avian" "YM," speed 92 m.p.h. and time 9 mins. 45 secs. The close finish was clearly indicated by the slight differences in times. Only one second separated the "Imp" from the "Avian" and two seconds between the latter and the third machine, "Avian." The prizes were: 1st, Challenge Cup and £40; 2nd, £20; and 3rd, £10. Passengers were

Sir Alan Cobham was also an absentee. Herr Fieseler, the German aerobatic expert, who was advertised as a "star turn," at the meeting, led the parade in his German biplane, and was followed by Mr. G. E. Lowdell, the Suffolk Club instructor, on the Blackburn "Bluebird," Mr. Harold Pixton, the pioneer airman, on an Avro "Avian," Lieut. Bentley, on an "Avian," and Sir Sefton Brancker on a D.H. "Moth," flown by Major Cordes. After taking off the machines flew in line round the enclosures at a low altitude, loud speakers announcing their identity to the crowds, then landed.

Inter-Club Relay Race.—This event should have been a contest between Felixstowe and the Royal Aircraft Establishment, but it seemed to boil down to a lone performance flying against time by the latter, Flt.-Lt. Bonham Carter and Flying Officer Thorne being the pilots on the Avro "Avian" "QN." There were three laps of the short course of $6\frac{1}{2}$ miles per lap to fly for a Challenge Cup and Silver Tankards, presented by Mr. Sawley Brown. It was open to club teams of three members, each pilot taking off from a circle, covering the course and landing in the circle again or as near as possible. Later in the meeting other clubs competed, and they will be mentioned in their turn.



[*"FLIGHT" Photograph*

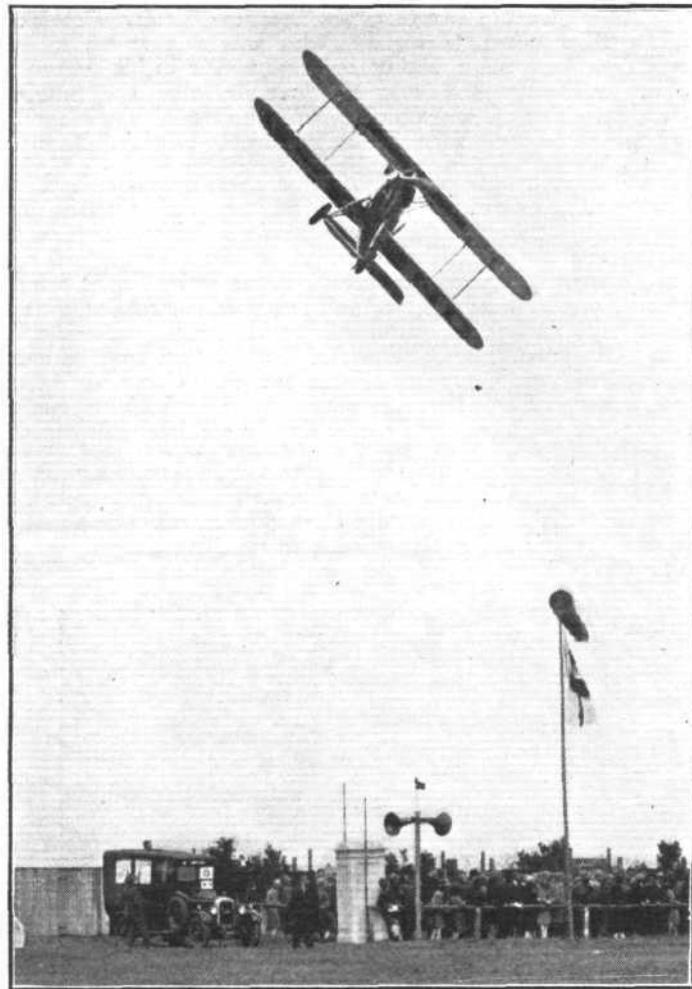
BLACKPOOL AIR PAGEANT: Armstrong-Whitworth "Sisks," single-seater fighters, circling the aerodrome in follow-my-leader style.

carried by each pilot, and they received 25 per cent. of the stakes, whilst the machines were entered by business houses and hotels in Blackpool, who secured this right by payment of an entry fee. The remaining 75 per cent. went either to the entrants of the machines or the pilots. Mr. Howarth, the passenger in the winning "Imp," received the Cup as a permanent possession.

Inter-Club Members' Handicap.—This event produced four starters. Mr. W. J. Brighton, of the Midland Club, flew D.H. "Moth" "LT" (handicap allowance 1 min. 34 secs.), Mr. I. W. H. Thomson, Yorkshire Club, Blackburn "Bluebird" "TB" (1 min. 14 secs.); Mr. K. Twemlow, Lancashire Club, on Avro "Avian" "RR" (0.19 sec.), and Dr. Dixon, Newcastle Club, on D.H. "Moth" "PT" (0.09 sec.). There was a close finish, Dr. Dixon, on the "Moth" (Cirrus) winning by $\frac{3}{5}$ sec. at 95 m.p.h. in net time of 9 mins. 28 secs. The second man was Mr. Twemlow on the "Avian" at 93 m.p.h. in 9 mins. 39 secs. Third, Mr. Brighton at 80 m.p.h. in 11 mins. 16 secs. on the "Moth." The course was $14\frac{1}{2}$ miles and the first prize Mrs. J. Leeming's Challenge Cup and £25; 2nd prize, £15; and third, £5. Also the competitors scored points for the Challenge Cup presented by the Society of British Aircraft Constructors, competed for at the four official meetings this year of which Blackpool was the last, and thus decided the winner.

Fly-Past of Famous Pilots and Machines.—This item did not produce the entire company expected. Flight-Lieut. Webster was a spectator instead of an entrant (as scheduled), and Mr. F. Raynham looked on when one would have thought that his claims to the realms of fame were undoubted.

German Aerobatics.—Herr Fieseler's performance, the first in England, was eagerly awaited by expert and inexpert. He arrived during the morning on his machine from Woodford, Cheshire, with his mechanic. The machine he flies is a Raab-Katzenstein "Schwalbe" small cantilever biplane fitted with a Siemens 112 h.p. air-cooled radial engine. Narrow ailerons are on both top and bottom wings and the top ones overlap the wing tips. At the centre of the wings the section is very thick, but it tapers away towards the tips; also the chord decreases towards the wing tips. It is a two-seater sport or training machine of metal and wooden construction. At the time appointed for his performance, Fieseler carefully inspected his machine, and then had the misfortune to discover engine trouble whilst revving up. There was some delay until it was announced that his engine was still faulty but that he would go up and try it. This he did, and after circling for a while, he commenced aerobatics at about 1,500 ft. From the purely expert point of view, he was not exceptional until he performed the vertical figure of eight, and the stirring feature of this was the slow struggle to bring the tail level with the nose at the end of the outside loop following the ordinary loop above it. The movement finished at a fairly low altitude, thus clearly revealing the spectacular climb to normal. His flying is very graceful. He crossed the aerodrome on a good straight line whilst doing slow rolls first to the right and then to the left, and repeatedly banked steeply whilst inverted. Most of his flying is done upside-down, in which position he has made himself equal to many of the manœuvres performed in normal position. That, one suggests, is his particular flair. Finally, he side-slipped very steeply over the enclosures. All our pilots considered that he



[*"FLIGHT" Photograph*

Squadron-Leader J. Noakes applying his crazy flying inventiveness on the Avro "Avenger" at the Air Pageant, Blackpool.

had put up a very good show, and they gave him a deserved ovation, which he acknowledged with modest pleasure as he taxied in. The following day he repeated his performance. It is stated that he received £300 as a fee. We would again refer our readers to the diagrams and article on Herr Fieseler's stunts, published in our issue for January 5, 1928, for the diagrams reveal them at a glance.

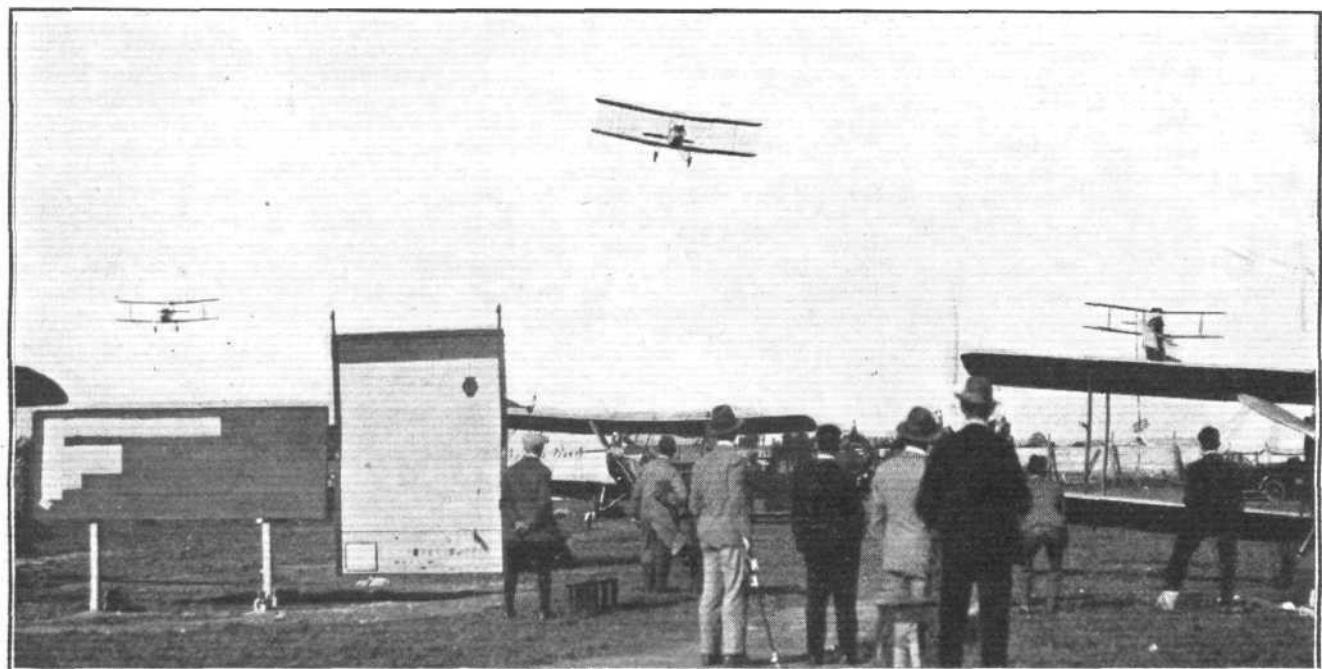
Open Handicap Race.—The first heat in this event was won by Flt.-Lt. T. Rose, on D.H. "Moth" "LT" (Cirrus) (handicap allowance, 11 mins. 35 secs.), at $84\frac{1}{2}$ m.p.h. in 21 mins. 17 secs. Miss O'Brien was second on her D.H. "Moth" "OS" (allowance, 11 mins. 27 secs. at $83\frac{1}{2}$ m.p.h.), and third place went to Mr. Turnbull on D.H. "Moth" "QV" (allowance, 9 mins. 5 secs.) at 94 m.p.h. in 19 mins. 10 secs. Two laps of the course were covered and on the first lap the competitors were in the order in which they finished. The winning D.H. "Moth" is the Midland Club machine, which has now been more or less running for over three years.



[*"FLIGHT" Photograph*

Mr. Norman Jones starting up his D.H. "Moth" (Cirrus) at Blackpool, where he won the Owner-Pilots' Handicap Race at 97 m.p.h.

Heat 2.—Flt.-Lt. Bonham Carter won this on the Parnall "Imp" ("Genet") (allowance, 6 mins. 49 secs.) at 110 m.p.h. in 16 mins. 23 secs. Flt.-Lt. Oliver was second on Miss Leathart's Sopwith "Grasshopper" (allowance, 12 mins 28 secs.) at $80\frac{1}{2}$ m.p.h. in 22 mins. 19 secs. Mr. Parkinson was third on D.H. "Moth" "PT" (allowance, 8 mins. 42 secs.) at $93\frac{1}{4}$ m.p.h. in 19 mins. 19 secs. At the first lap, the "Grasshopper" was leading and the "Imp" which had started last, was still last although easily overhauling.



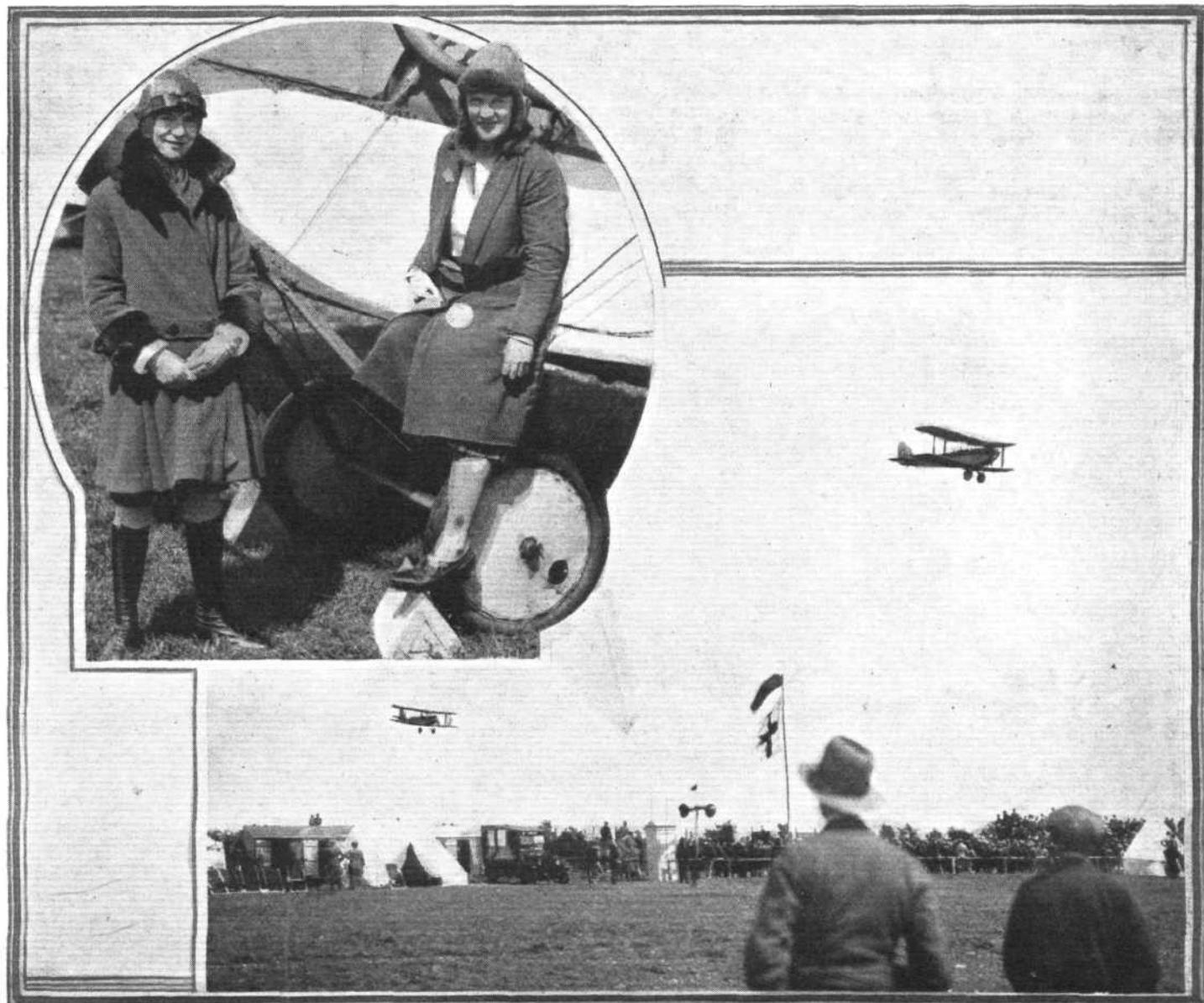
[*"FLIGHT" Photograph*

OPEN HANDICAP: Miss W.S. Brown, (centre) on her Avro "Avian" (Cirrus), winning the Open Handicap from Capt. Baker on an Avro "Avian" and Flight-Lieut. T. Rose on the D.H. "Moth" by two seconds.

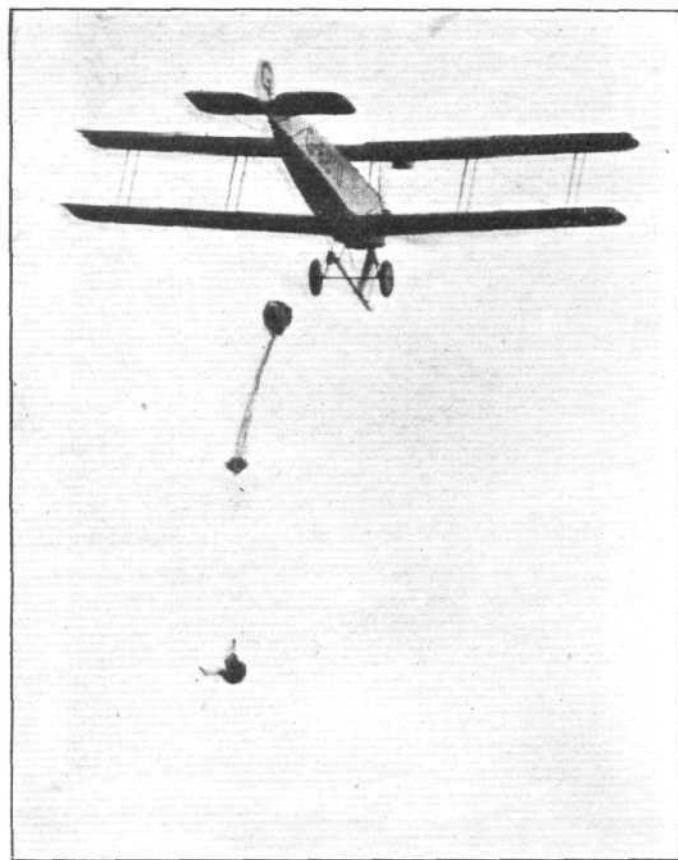
Heat 3.—This heat went to Capt. Baker on "Avro Avian" "RR" (Cirrus) (allowance, 9 mins. 05 secs.), at 99½ m.p.h., in 18 mins. 09 secs. Second place fell to Mr. Bartlett on D.H. "Moth" "TV" (allowance, 8 mins. 27 secs.), at 100½ m.p.h., in 17 mins. 54 secs. Mr. "Harold Brooklyn" was third on his Westland "Widgeon-Genet" "RQ" (allowance, 6 mins. 34 secs.), at 107 m.p.h., in 16 mins. 49 secs. Mr. Will Hay, on D.H. "Moth" "NY" led on the first lap, being the first man off. Capt. Beck, on the Blackburn "Bluebird" "TB," was another competitor. He had to give the former "Mark I Moth" a start, and the "Bluebird" pilots feel now that they should, at least, start on equal terms with it.

Between these heats, other events were staged. Miss June made a spectacular parachute descent in the "Guardian Angel," from an Avro at the record low altitude of 150 ft. Sqdn.-Ldr. J. Noakes gave an exhibition of crazy flying on the Avro "Avenger," in the course of which he was obliged to make a forced landing outside the aerodrome, without, however, damaging the machine. He took off again from the emergency spot later, after mechanics had rectified the trouble. Col. G. de Bernardi was scheduled to give that particular display, but he was not present.

Owner-Pilots' Handicap Race.—The final of this race was flown, the winner being Mr. Norman Jones on his D.H. "Moth" (Cirrus). The handicap allowances were, of course, the same as those that applied in the preliminary heats. Miss Brown took off first on her Avro "Avian" "VZ" followed by Mr. Jones, Flt.-Lt. Soden on Genet-Moth "OU" Mr. Cazalet on Westland-Widgeon "RM" and Mr. Brooklyn on Westland "Widgeon" "RQ." Mr. Jones' speed was 97 m.p.h. and time 9 mins. 17 secs. Miss Brown was second at 91½ m.p.h. in 9 mins. 52 secs., and Flt.-Lt. Soden third



BLACKPOOL : (Inset) Miss O'Brien, sitting on the leading edge of her D.H. "Moth," and her passenger, Miss Mawdsley, and winning the Daily Dispatch Nomination Handicap. Above, the Avro "Avian" Cup.



[“FLIGHT” Photograph]
Close view of Miss June leaving the Avro on her record low jump with a “Guardian Angel” parachute from 150 ft. She landed near the crowd, who were delighted to meet her.

at 96 m.p.h. in 9 mins. 23 secs. Although Mr. Brooklyn was last, he averaged 103 m.p.h. on his “Widgeon,” which has the re-rated Genet II engine.

SATURDAY'S PROGRAMMES

Open Handicap Race.—In the fourth heat of this event, Miss Brown was successful on Avro “Avian” “VZ” (handi-

cap allowance 9 mins. 33 secs.) at 98 m.p.h. in the net flying time of 18 mins. 22 secs. Mr. Martin was second on the D.H. “Moth” “SK” (8 mins. 27 secs.) at 100½ m.p.h. in 17 mins. 57 secs. Third place went to Mr. Wood, on the Blackburn “Bluebird” “RF” (10 mins. 54 secs.) at 84 m.p.h. in 21 mins. 25 secs. Flying Officer Thorne, on the D.H. 53, led in the first lap, and was first home in the second lap, but he was disqualified for not turning the right point at the aerodrome. So Miss Brown was placed first.

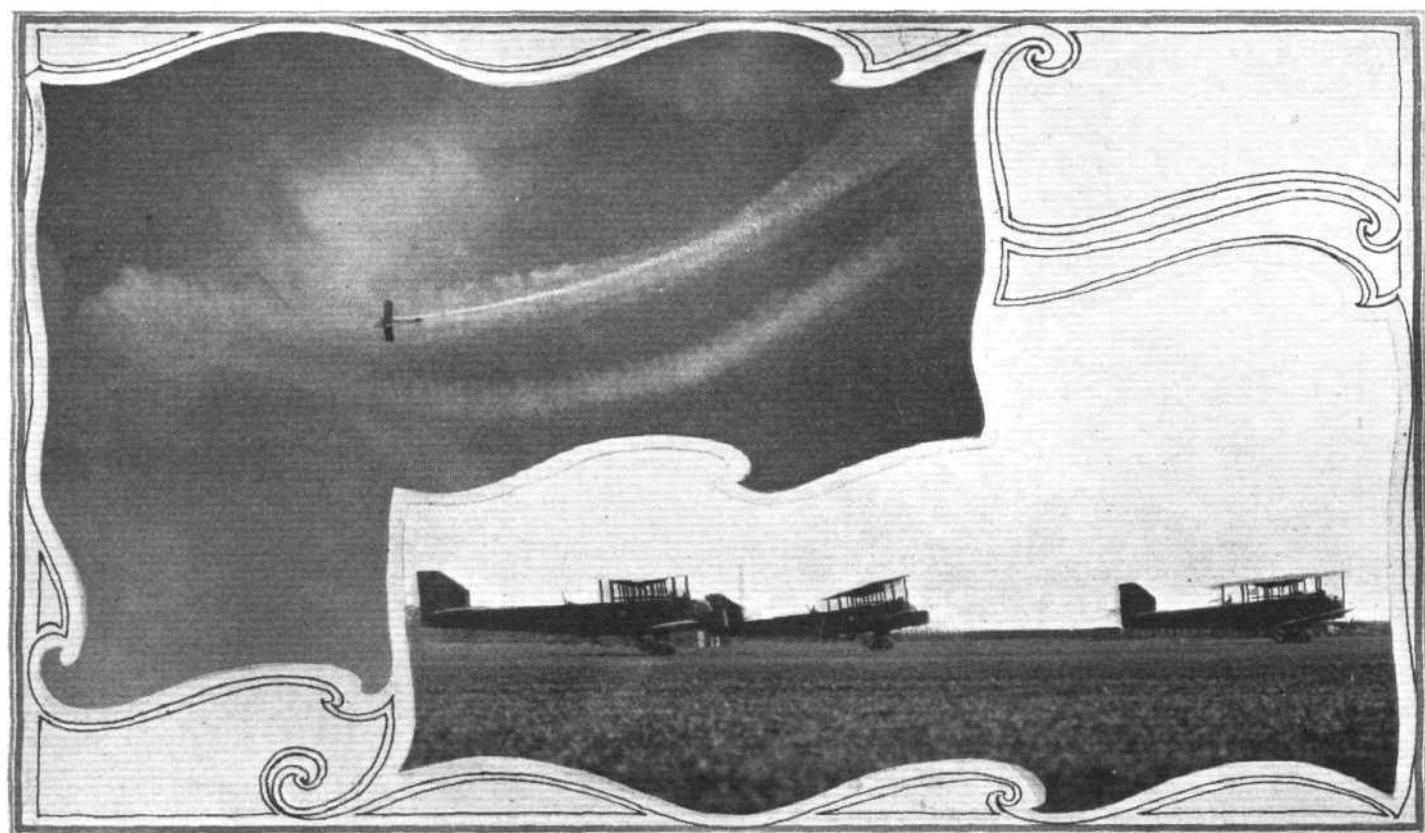
“Daily Dispatch” Nomination Handicap.—Heat 1 of this race went to Miss Leathart's Sopwith “Grasshopper” (handicap allowance 2 mins. 46 secs.) at 80 m.p.h. in the net flying time of 11 mins. 16 secs. Second was Mr. Summer, on the Avro “Avian” “YM” (0.52 sec.) at 93½ m.p.h. in 9 mins. 37 secs. Third place fell to Flying Officer Thorne, on the Avro “Avian” “QN” (0.03 sec.) at 101 m.p.h. in 8 mins. 56 secs. Passengers were carried in this event. The course was 14½ miles.

Heat 2.—Miss O'Brien carried off the second heat on her D.H. “Moth” “OS” (handicap allowance 2 mins. 33 secs.) at 84½ m.p.h. in 10 mins. 39 secs. Sqdn.-Ldr. Noakes was second on Avro “Avian” “YN” (0.52 sec.) at 97½ m.p.h. in 9 mins. 13 secs. Third position fell to Flt.-Lt. Rose, on the D.H. “Moth” “LT” (2 mins. 20 secs.) at 84 m.p.h. in 10 mins. 42 secs. The Parnall “Imp” flown by Flt.-Lt. Bonham Carter crashed into Mr. Downes Shaw's D.H. “Moth” whilst taking off in this heat, wiping the latter's top starboard wing off and its own undercarriage, but making a successful landing on the fuselage with but slight damage to the nose of the lady passenger.

Heat 3.—Miss Brown carried off this heat on her “Avian” “VZ” (handicap allowance 1 min. 19 secs.) at 94 m.p.h. in 9 mins. 36 secs. Capt. Baker was second on the “Avian” “RR” (1 min. 05 sec.) at 96 m.p.h. in 9 mins. 24 secs. Mr. Veal, on the D.H. “Moth” “NY” (2 mins. 20 secs.) won third place at 84½ m.p.h. in 10 mins. 40 secs.

There next followed an excellent display of flying on slotted wing machines, a D.H. “Moth” and an Avro “Avian,” by Major Cordes and Sqdn.-Ldr. Noakes, respectively.

Open Handicap Race.—The fifth heat of this event went to Flying Officer Boyes, on the Avro “Avian” “YM” (handicap allowance 8 mins. 39 secs.) at 97½ m.p.h. in 18 mins. 28 secs. The Avro “Avenger,” flown by Flt.-Lt. S. N. Webster, which started at scratch and had only just taken off as the first machine completed the first lap, was second at 180½ m.p.h. in 9 mins. 59 secs. He did 200 m.p.h. at the finish and flew the final lap at 197 m.p.h. Flying Officer Thorne won third place on “Avian” “QN” (7 mins. 00 sec.) at 104 m.p.h. in 17 mins. 19 secs.



AIR BATTLE AT BLACKPOOL : (Above) A Handley Page “Hyderabad” night bomber descending in flames after the Battle for Blackpool ; and (below) three of the same type bombers taking off for the affray.

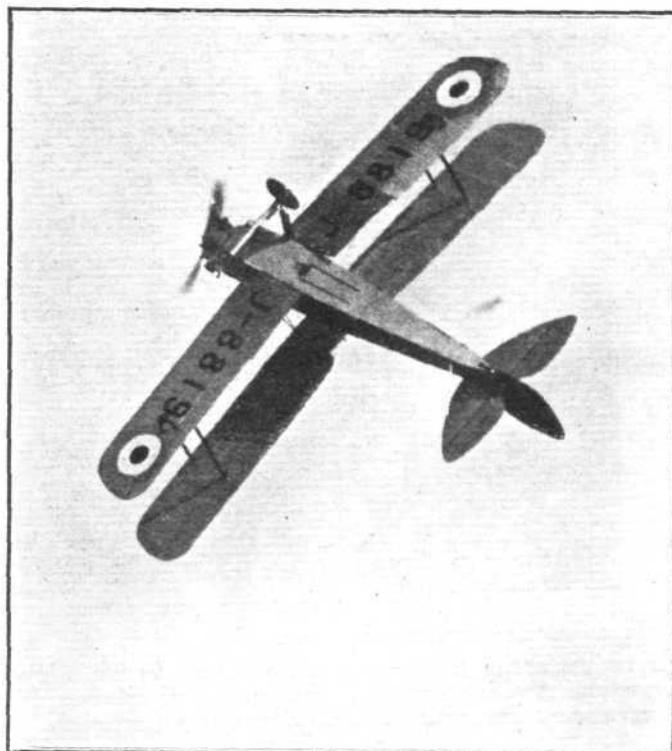
Open Handicap Race.—Heat 6 was won by Mr. Uwins, on the Bristol P Training biplane "GA" (handicap allowance 0.04 sec.) at 117½ m.p.h. in 15 mins. 18 secs. He started last and beat Flt.-Lt. Le Poer Trench, on the Halton monoplane "OO" (11 mins. 02 sec.), whose speed was 87½ m.p.h., and time 20 mins. 32 secs. The third place went to Flt.-Lt. Soden, on his Genet-Moth "OU" (8 mins. 14 secs.) at 101 m.p.h. in 17 mins. 49 secs.

Exhibition.—Mr. Lowdell gave his usual neat display of aerobatics on the Blackburn "Bluebird," flying upside down and rolling, etc. Then Mr. Irvin descended from Flt.-Lt. Soden's D.H. "Moth" with one of his Irvin parachutes, and landed in the middle of the aerodrome.

Club Instructors then competed in an aerobatic competition, the first part of which was carried out the previous day. Capt. Beck, Mr. Parkinson, Mr. Martin, Flt.-Lt. Rose, Capt. Baker, Mr. Lowdell, Flying Officer Thorne, Mr. Matthews, and Mr. Bartlett were among the competitors, each of which had to perform a loop, "flick" rolls to the right and left, a stunt of their own choosing, and finally a landing on a mark without engine. The judge of the event was Flt.-Lt. Carr, D.F.C., A.F.C., and Messrs. A. V. Roe & Co., Ltd., presented a cup for the winning club, to be held one year, and stakes of £45. Total possible points were 45, which included five points for landing and 10 points for each stunt. The winner was Mr. Bartlett, instructor to the Bristol Club, who achieved 38 points. Flt.-Lt. Rose (Midland) was second (36), Mr. Lowdell (Suffolk) third (29), and Mr. Martin (Nottingham) fourth (27).

"Daily Dispatch" Nomination Handicap.—The final of this event was won by Miss O'Brien, with Miss Mawdsley as passenger, on her D.H. "Moth" "OS" (handicap allowance 2 mins. 33 secs.) at 84 m.p.h. in 10 mins. 42 secs. Second position went to Capt. Baker on the Avro "Avian" "RR" (1 min. 05 sec.) at 97½ m.p.h. in 9 mins. 15 secs. Third place was won by Miss Brown, on her Avro "Avian" "VZ" (1 min. 19 secs.) at 94½ m.p.h. in 9 mins. 33 secs. Miss Leathart's "Grasshopper" was fourth. Miss O'Brien won by 1 sec., and only 4 secs. separated the second and third machines. First prize was the "Daily Dispatch" Challenge Cup and £60, second, £30, and third, £15. The cup was presented to the passenger of the winning machine, and stakes divided between pilots and passengers.

Inter-Club Relay Race.—The Midland Aero Club gained this event, the conditions of which are described above. Three pilots competed for each club. Mr. H. J. Willis, Mr. E. J. Brighton, and Mr. R. L. Jackson flew for the winning club on the D.H. "Moth" "LT." Their handicap allowance was 3 mins. 13 secs., and handicap time 14 mins. 39 secs. The Yorkshire Club was second, with their Bluebird "RF," flown by Mr. Norway, Mr. Wood, and Mr. Thompson. Handicap allowance was 3 mins. 38 secs., and handicap time 15 mins. 47 secs. Newcastle Aero Club gained third place



["FLIGHT" Photographs]

One of the Genet-Moths inverted during one of its climbing rolls in the course of the same remarkable performance by Flying Officers Boyle and Atcherley.

with their D.H. "Moth" "PT," flown by Mr. Heppell, Dr. Dixon, and Mr. Todd. Handicap allowance, 1 min. 12 secs., and handicap time, 17 mins. 23 secs.

Open Handicap Race.—The final of this event was won by Miss W. S. Brown on her Avro "Avian VZ" ("Cirrus") at 99½ m.p.h. in 18 mins. 4 secs. Second place went to Capt. Baker on the Avro "Avian RR" at 102 m.p.h. in 17 mins. 38 secs. Flight-Lieut. Rose, on the Midland Club's D.H. "Moth LT" won third place at 89½ m.p.h. in 20 mins. 10 secs. Two laps of the course were flown, totalling 29 miles, and the first prize was the Blackpool County Borough Challenge Cup, presented by the Blackpool Corporation and £100, second prize £50, and third £25.

Balloon-bursting Competition.—This was the last event on the Civil programme, and Mr. Summers, Mr. Lacayo,



AIR PAGEANT : (Left Inset) Herr Fieseler's machine on its back at Blackpool, in which position it flew for the greater part of his exhibition. (Right Inset) Herr Fieseler and (centre) his machine taking-off.



[“FLIGHT” Photograph]
MIDLANDERS AT BLACKPOOL (Left to Right)—M. Turner (Engineer), Mr. E. R. King (Pilot), Mr. W. H. Sutcliffe (Pilot Member), Mr. O. L. Richards (Member), Mr. W. L. Halland (Engineer), Mr. H. J. Willis (Member), Mr. R. L. Jackson (Pilot), Mr. E. J. Brighton (Pilot). (On ground)—Flight-Lieut. T. Rose (Instructor).

Mr. Lowdell and Flying-Officer Thorne tied. As the hour was late they agreed to toss, and Mr. Summers thus received the cup presented by Lady Holt, the other three dividing the stake money.

ROYAL AIR FORCE EVENTS

The Royal Air Force gave an excellent display during the afternoon, a particular feature of which was exceptional formation flying. The weather was perfect, and from the

commencement of the programme the air became charged with slick activity, which was a decided fillip to one's lethargy after many hours of racing. Those who saw the Hendon Display found a very fine imitation. Events began with the familiar converging bombing attack by five Gloster “Grebes” of No. 25 (Fighter) Squadron, the objective being three derelict-looking tents in a row on the field. In line ahead formation they suddenly dived upon them to attack, zoomed in different directions on each side of the leader, turned and gradually closed in upon his machine. This was



[“FLIGHT” Photograph]
AT BLACKPOOL : (Left to right, standing)—Sqdn.-Ldr. Rollo de Haga Haig, Mrs. Bennett Baggs, Mr. Bennett Baggs, Mrs. Barr, Maj. J. B. L. Cordes, Flight-Lieut. S. N. Webster, F/O. Boyes, Mr. A. J. Wallace Barr. (On ground)—Mrs. Bradbury, Mrs. Oliver and Flight-Lieut. Bradbury.

repeated, and then began continuous attacks from all directions with perfect regularity and excellent bombing effect, which quickly reduced the tents to collapsed rags ; then fire conveniently applied the final destruction.

At Hendon, one of the most outstanding items was Flt.-Lt. Horniman's individual training exhibition on a Gloster "Gamecock." He repeated this at Blackpool, performing loops, half loops, half rolls, stalling turns, vertical climbs, spinning nose dive, and sideslips, with the same gracefulness and ease, against an azure sky, and to the accompaniment of whoops of admiration.

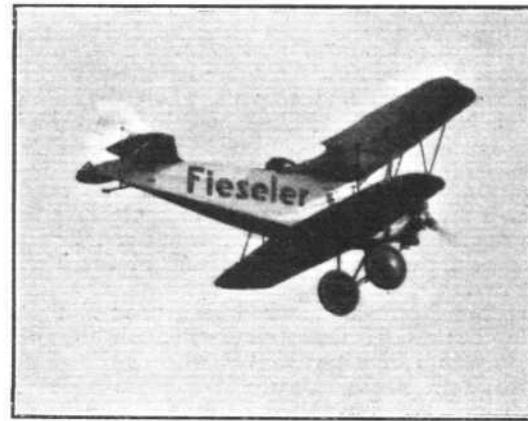
Armstrong-Whitworth "Siskins" showed how quickly a squadron could take off on receipt of a sudden alarm, and revealed the excellent formation flying of No. 111 (Fighter) Squadron. When they crossed the aerodrome fairly low in close V-formation, the symmetry kept was artistic, and was maintained in all their subsequent movements. Not one machine seemed to falter out of place throughout.

There was the usual aerial combat between Gloster "Grebes," a considerable part of the manoeuvring for the vital position seeming to embrace individual stunting of no clear purpose for the objective. The pilots belonged to No. 25 (Fighter) Squadron.

The "tit-bit" of the display was the revelatory stunt flying of Flying-Officers Boyle and Atcherley on "Genet-Moths" with wings of scarlet. Their skill was already well known to the experts there, but they produced tricks from their bags which made one honestly reflect that it is practically impossible to show our best Air Force pilots tricks they cannot do. To express a mere fact, they emulated Herr Fieseler with an ease that showed full intimacy with such stunts, and the German pilot acknowledged their performance with excellent grace. They repeatedly did the outside loops, and thrilled the most hard-boiled witness with their slow rolls across the aerodrome in procession at an height which did not seem much more than the wing span of the D.H. "Moth." Many of the pilots confessed to a desire to turn their heads away when they saw that. Superlatives can only describe the effect. The skilful pair also repeated their concerted flight over the aerodrome, one in normal position and the other upside down. When flying over the head of the crowd round the machine park, one of them raised amusement as he shut his engine down by emitting a toot-toot on a horn. They also did very low loops, going over at times almost from the deck, and flew together in the inverted position. They have nothing more to learn.

There was a good battle for Blackpool. First Hawker "Horsleys" from No. 11 (Bombing) Squadron approached in steady formation and were subjected to heavy bombardment by anti-aircraft guns, the "shots" visibly peppering the tails of the machines. Fighters from the same fold, Hawker "Woodcocks" of Nos. 3 and 17 (Fighter) Squadrons, came to attack, each bomber being assailed with machine-gun fire. One of the enemy was hit and began to descend, trailing a long curving line of grey-mottled smoke in its wake across the blue sky, and finally dived out of sight. Handley Page "Hyderabad" night bombers, of No. 99 (Bombing) Squadron, next approached with evil intentions on Blackpool.

and were similarly attacked by the fighters. One of the three was hit and began its spiralling descent in smoke which streaked the sky like a narrow smoke-screen, through which machines faded as they fought. A "Woodcock" fighter was hit too, and began a quick spin to earth. The "Horsleys" again tried to pass the barrage and defending fighters, and each was seized upon greedily by two or three of the smaller machines. One of them circled for a long time trying to shake its relentless foe off its tail. Finally the "Horsley" belched forth the smoke screen and dived to earth. The

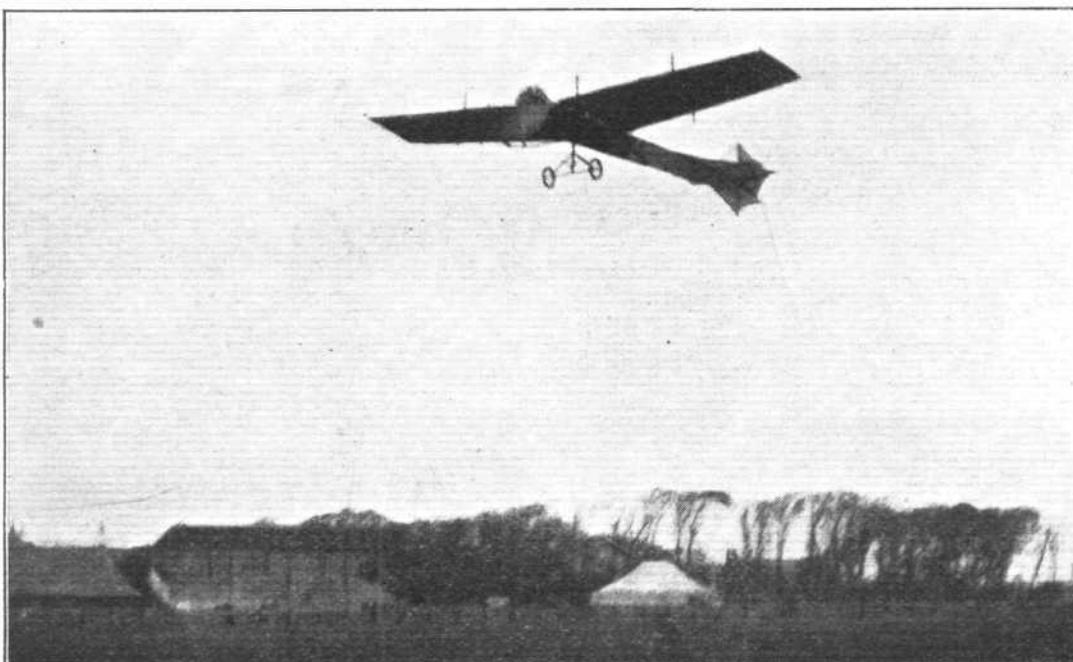


[“FLIGHT” Photograph

Herr Fieseler, the German pilot, leaving Blackpool in his machine after the meeting at which he demonstrated his vertical figure of eight, rolling with horizontal fuselage, &c.

anti-aircraft guns were manned by No. 351 Field Battery, R.A. (T.).

The Air Force programme was concluded with a Set Piece. A Hawker "Horsley" was supposed to be flying across a stretch of desert territory, engaged on one of the historical long-distance flights. The natives in the territory were treacherous, although professing friendship, therefore the "Horsley" was escorted by a Fairey "Fox." Owing to engine trouble the "Horsley" had to descend in the territory near a native outpost. The natives (looking very white in white overalls) rushed out and began to fire on the unarmed pilot and his machine. The escorting "Fox" then repeatedly dived and scattered them with machine-gun fire, and finally landed between them and the "Horsley," towards which the pilot ran to assist, whilst his gunner kept the crouching enemies at bay with the machine gun from the cockpit. The engine was repaired under continuous fire, but both machines managed to start off again safely, having meanwhile sent a message by wireless to the nearest R.A.F. aerodrome. From this place a squadron of Fairey "Fox" machines (No. 12 Squadron) immediately departed, and on arrival at the outpost they bombed it to destruction with realistic effect.



Flight photograph

The Blackpool Flying Meeting: Undoubtedly the event of this meeting was the remarkable flight, in half a gale, of the Antoinette monoplane piloted by Hubert Latham — sorry! We slipped back some 19 years to the first Blackpool meeting!!

THE ROME—BRAZIL NON-STOP FLIGHT

The Atlantic Again Conquered

NEW novels or plays by Edgar Wallace and flights across the Atlantic appear to be becoming permanent thrillers. The latest edition in the latter category is the remarkable non-stop flight from Rome to Brazil by the two well-known Italian airmen, Capt. Arturo Ferrarin and Maj. del Prete on July 3-5.

By this flight, of approximately 5,000 miles, Ferrarin and del Prete have beaten the long-distance record established by Chamberlin and Levine, when they flew 3,905 miles from New York to Eisleben in June last year, although they failed to better their own endurance record of 58 hrs. 37 mins., established last month. Owing to the conflicting nature of the various reports of the Rome-Brazil flight, it is at present difficult to give actual figures as regards times and distance, but roughly speaking it may be said that they were in the air for a period of about 50 hrs.

Leaving the Montecelio aerodrome near Rome on the Savoia-Marchetti S.64 monoplane—incidentally the same machine on which they put up the world's duration record last month, and since beaten—at 7.51 p.m. on July 3, they proceeded *via* Sardinia to the North African coast. On striking this coast near Algiers they flew into very hot weather, and eventually passed over Gibraltar in the early hours of July 4, where fog was encountered.

They were next reported over Casablanca, and later at Rio del Ora, where the journey across the water was commenced. In the evening they passed the Cape Verde Islands, and then began the flight of nearly 2,000 miles across the Atlantic. During their crossing that night and the following morning several messages from the machine were picked up by ships at sea.

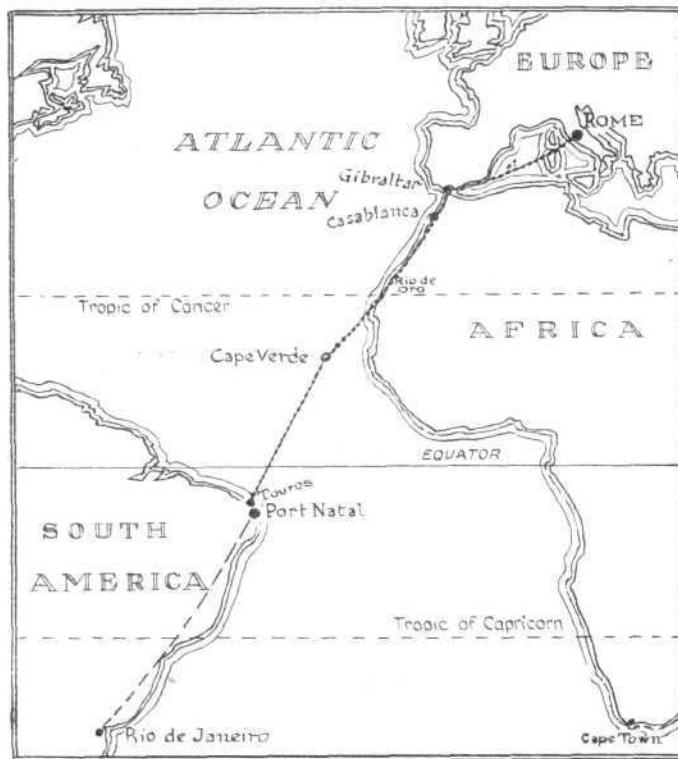
On the Thursday afternoon, July 5, the aeroplane was close enough to the Brazilian coast to enable messages of greeting to be sent out to those on shore—one, received at Pernambuco, saying "Arriving Brazil we send our salutations."

It appears that on striking the Brazilian coast near Port Natal, Ferrarin and del Prete continued southwards towards Pernambuco, but soon encountered bad weather and fog, which prevented them from picking out their bearings. They, therefore, decided to land. According to some reports a landing was made on the beach at Genipabu (or Senitabu), near Port Natal, at 6 p.m. (local time). Then it seems a few hours later they set out once more with the intention of continuing towards Rio de Janeiro, but the weather was again too bad, so they decided to return north to Port Natal.

Flying low, the airmen succeeded in following the coast line to Port Natal, but owing to rain and low clouds they were unable to land on the aerodrome—which is situated behind the hills to the south-west. Eventually, however, with the petrol almost exhausted, a forced

landing was effected on the sandy beach at Touros Bay, some 100 miles north of Port Natal, during which the wheels of the machine sank into the sand, resulting in damage to the chassis.

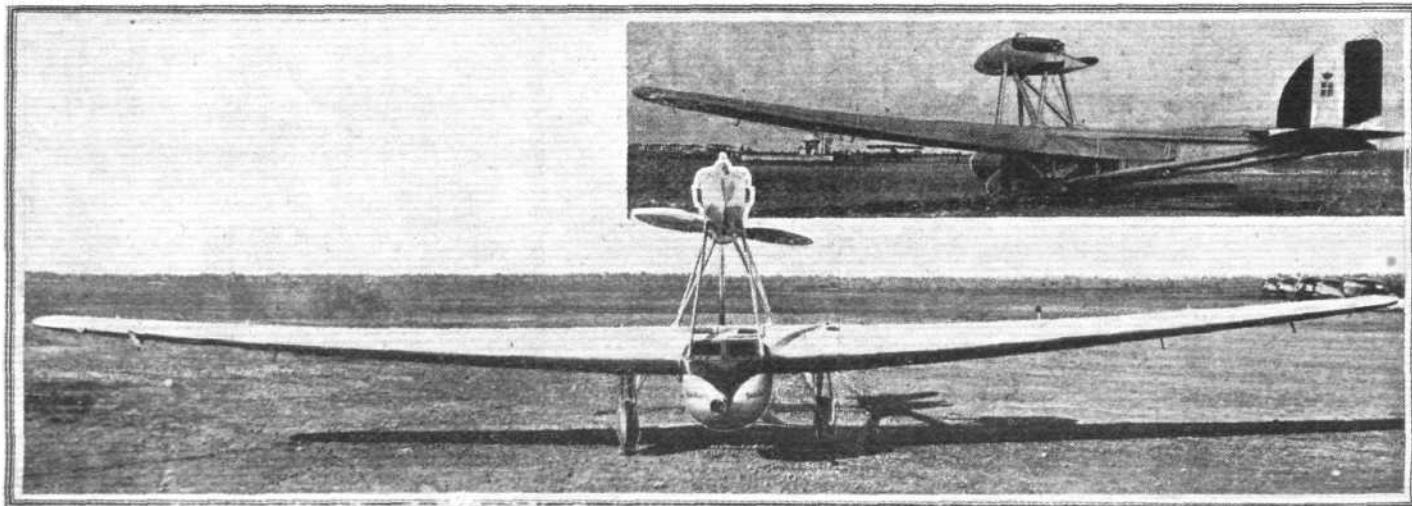
A Brazilian mail plane at once proceeded to the spot, and conveyed the two airmen back to Port Natal on July 6, where they were given a tremendous reception. Subsequently, Ferrarin and del Prete flew in a mail plane



THE NON-STOP SOUTH ATLANTIC FLIGHT : Sketch map showing the approximate route taken by Capt. Ferrarin and Major del Prete

to Rio de Janeiro, and here another enthusiastic welcome was given to the airmen.

Naturally, this fine flight—which is an all-Italian effort—has given rise to considerable joy in Italy, while Sir Samuel Hoare, British Secretary of State for Air, has sent the following telegram to General Balbo, the Italian Under Secretary of State for Air: "On behalf of Air Council, tender hearty



THE NON-STOP SOUTH ATLANTIC FLIGHT : The Savoia-Marchetti S.64 monoplane, fitted with a 550 h.p. Fiat A. 22T engine, on which Capt. Ferrarin and Major del Prete made a non-stop flight from Rome to Brazil

congratulations on magnificent non-stop flight Rome to Brazil by Capt. Arturo Ferrarin and Maj. del Prete."

Regarding the machine on which this flight was accomplished (two views of which are shown in the accompanying illustration), the following brief particulars may be of interest. The Savoia-Marchetti S.64 is one of the latest products of the Italian Savoia firm. It is a monoplane of somewhat unusual design, being a development of the Savoia S.55 seaplane "Santa Maria," on which Com. di Pinedo made his recent world flight. It is, however, a land machine, and is fitted with a single 550-h.p. Fiat A.22.T engine (Marelli magneto).

The S.64 has no fuselage, but instead a short nacelle located in the centre of the large thick-section cantilever wings, while the tail planes are carried by four tubular

outriggers extending in V's from the wings and undercarriage. The engine is mounted on a cabane of struts high up above the centre of the wings, and drives a pusher air-screw. When Ferrarin and del Prete made their duration record on this machine, "Salvator" parachutes formed part of the equipment, and we assume this was also the case in the Atlantic flight. "Shell" was the fuel used on this flight, while the lubricant was "Wakefield."

The principal characteristics of the S.64 are:—Span, 70 ft. 6 in. (21.5 m.); overall length, 29 ft. 6 in. (9 m.); wing area, 645.6 sq. ft. (60 m²); weight empty, 1,323 lbs. (2,400 kg.); total weight, with 1,433.25 gals. (6,500 litres) of fuel, 15,435 lbs. (7,000 kg.); wing loading, 24 lbs./sq. ft. (117 kg./m²); power loading, 30.8 lbs./h.p. (14 kg./h.p.); speed, 145.7 m.p.h. (235 km.p.h.).



H.M. AIRSHIP R 100

A Visit to Howden

By MAJOR F. A. de V. ROBERTSON, V.D.

No event in the flying world so fraught with great possibilities for the future of aerial transport is booked to occur this year as the completion of the two great rigid airships of 155 tons displacement, each containing 5,000,000 cubic feet of gas. These two ships, R 100 and R 101, are very different from each other in various respects, and as both are to be regarded as experimental, the difference between them gives a wide base of instruction.

R 100, or G-FAAV, to give her civil registration markings, is now nearly finished, and should leave her shed in September or October, when a captain (doubtless Major G. H. Scott) and crew from the Royal Airship Works will take her over on behalf of the Government and fly her to the mooring tower at Cardington. The girder work is completed, and some of the fabric cover is in place, enough to give an idea of what she will look like in the air, while still making it easy to study the construction work of the hull. Accounts which have been published so far have paid most attention to the possibilities of fox-trotting in the dining saloon. It is a fascinating possibility, no doubt, but of less importance than the factor of safety of the ship.

The length of the ship is 709 ft., the diameter 133 ft., and the actual displacement 156 tons. The material used for the framework is duralumin. The length of the ship is divided by transverse frames into 16 bays, containing 15 gas bags. The gas bags have been made in Germany by the Zeppelin company, and are being stored there until required for installation, as the facilities for such storage, which necessitates particular attention to ventilation, temperature, humidity, etc., already exist at the Zeppelin works, and would have to be improvised at Howden. One central girder runs along the middle of the ship from stem to stern, and will pass through channels in the gas bags. The "spider-web" diaphragms which separate the gas bags from each other fore and aft are centred on this girder. The outer ends of the diaphragms wires are attached to the longitudinal girders. In the event of one gas bag being deflated, the central girder will distribute the change in pressure along the whole framework of the ship.

The section of the ship is a 16-sided polygon with no keel member. This arrangement, it is admitted, gives large unsupported panels of fabric, but the fabric is strengthened on its inner surface by very stout tapes (if that word may be permitted), which are laced by wires to the main structure. This gives a concave shape to the panels, and as along the greater part of the hull the fabric is subjected to suction instead of pressure, this shape is claimed to be an advantage. The girders are designed to carry mooring strains well along the length of the ship.

The girders are triangular, composed of three helical tubes, riveted along the overlap. It goes without saying that the old design of Zeppelin joint has been discarded, and a very ingenious joint has been substituted. Where the transverse frames meet the longitudinals the respective sets of tubes do not touch each other, but are connected by two triangular members set at right angles to each other.

The living quarters are situated in bay No. 5, counting from the nose. Entry is made from the embarking platform on the mooring tower through a door below the nose, and a gangway about 60 yards long leads to the quarters. These

quarters are a separate unit, the weight of which is borne by the girders overhead. There are three storeys in the quarters, and the control car is situated just below them. This last will protrude at its forward part 7 ft. below the cover and 3 ft. at its rear. The bottom floor of the quarters contains the captain's cabin, the chart-room, and living quarters for a crew of 40. The first storey is the dining saloon, with cabins on three sides of it and a double staircase on the fourth side, which leads up to the second storey. The entrance door is between the two sections of this staircase.

The top storey is not floored all over, being arranged like a gallery round three sides of the dining saloon. This ensures good ventilation, for in the roof are suction ventilators operated by the forward motion of the ship. Outside the cabins, port and starboard, is a lounge or promenade, very ample on the first floor and about 4 ft. in depth outside the upper cabins. This, of course, will be inside the cover of the ship, but windows, some glass, some talc, will be fitted opposite the lounges—verandahs seems the word which best describes them—and will give a wide view of the earth or sea below.

The cabins have walls of double cotton material, which is fireproofed and also light-proof, but may not turn out to be sound-proof. Most cabins contain two bunks, one above another, but there are also four cabins with four berths. In all there are berths for 100 passengers, and the dining saloon will be able to seat 50 of them at a time at dinner tables. The electric kitchen and bar are just aft of the saloon. All the materials used are of the lightest—plywood, duralumin, Balsa wood, etc.—but the arrangement is so skilful and so tasteful that a great appearance of solidity as well as of comfort is conveyed.

As it was impossible to obtain Beardmore heavy-oil engines in time to get the ship into the air this year, six Rolls-Royce Condors will provide 4,200 h.p., which should enable all engines to be well throttled down on normal flight at 71.5 miles an hour. The top speed is expected to be 80 m.p.h. These engines are arranged in pairs, pusher and tractor, in three engine cars. Two of these, port and starboard, project below the hull 130 ft. aft of the living quarters, and 90 ft. further aft is the rear engine car. An A.C. car engine is also provided to run the dynamo, which will produce current for lighting, heating, cooking, and wireless. Thirty tons of petrol are carried inside the hull, disposed along the length of the ship. None of it will be within 60 ft. of the passengers' quarters. The presence of petrol on board will prohibit flights by this airship into tropical climates, and marks out the Atlantic as the proper sphere for her operations, unless and until heavy-oil engines are substituted for the petrol motors. The Aircraft Guarantee Co., Ltd., states that it has developed a modification which will eliminate petrol and give greater efficiency than the Diesel engines, but that at present no financial provision exists to enable this to be put in hand. However, as the Canadian Government is erecting a mooring tower at Montreal, it is, obviously, desirable that one of the new airships should visit the Dominion at the earliest opportunity, and on such a trip there is no great objection to carrying petrol. The record of war-time airships gives sufficient grounds for confidence.



THE · PARIS · AERO · SHOW · 1928

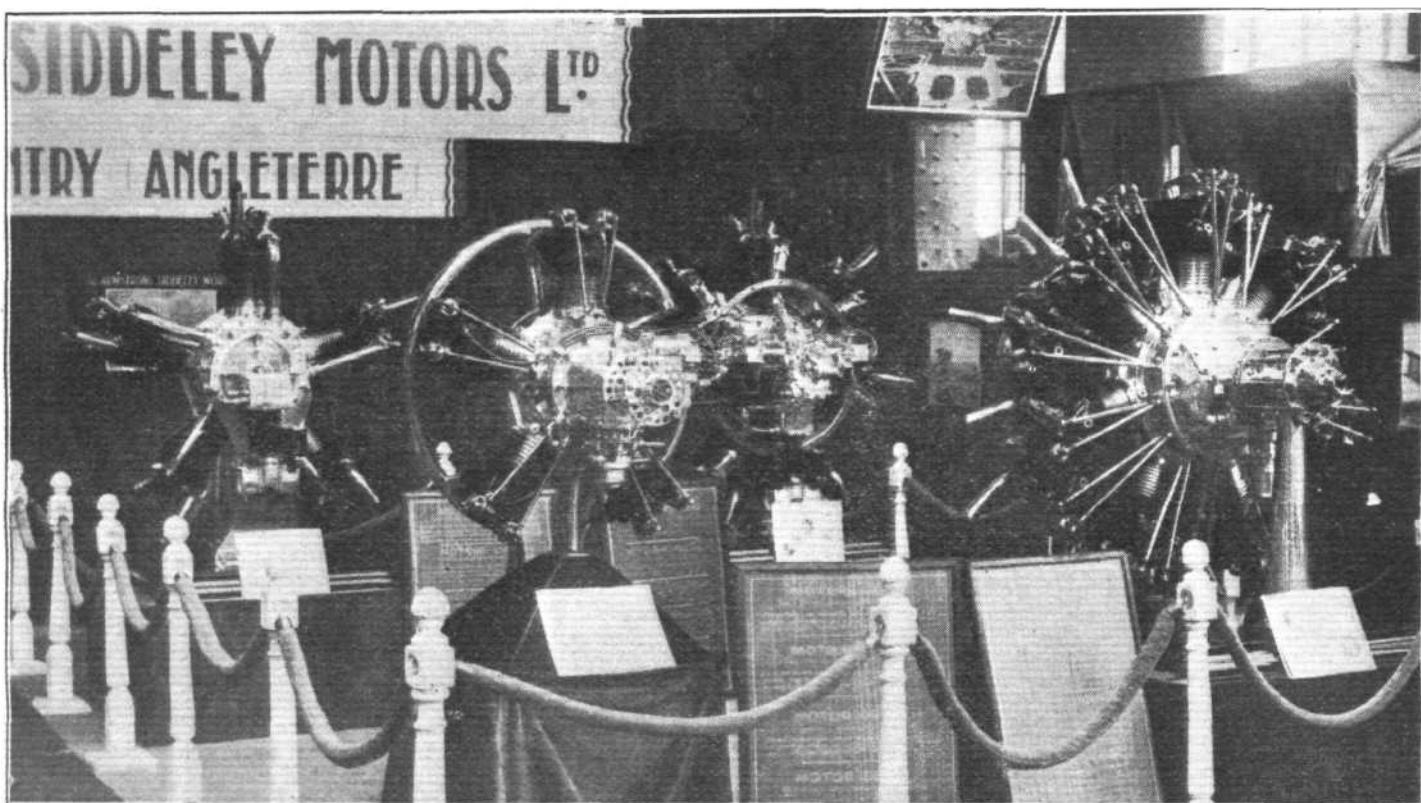
THE account in *FLIGHT* last week of what is to be seen at the Paris Aero Show had of necessity to be rather brief, space and time not permitting of anything approaching a detailed reference to every machine exhibited, even were it likely to be of interest to do so. In returning to the subject again this week, it is not our intention to attempt a "stand-to-stand" report, as it is felt that a large number of machines, although doubtless excellent in their own way, are either of well-known type, or of relatively small interest because of following along well-trodden paths in their whole conception. This is in no way intended as a slur, since obviously the art and science of aviation has reached a stage where radical departures from the orthodox are no longer to be looked for, but where the chief interest lies in detailed improvements rather than in general changes in type. Had we the space available there would be no difficulty in describing every machine exhibited at Paris, and were we to do so it would be found that there is scarcely one which

is not a reasonably good average aircraft. However, such a detailed account is not practicable, and it is proposed to divide the following notes into two main sections, the first dealing with machines as such, and the second with questions of structural design irrespective of the type on which the particular form of construction is employed.

Although the Paris Show is mainly military in character, we will review first of all a certain number of commercial and private types, and then such few military aircraft as appear of particular interest and of which information is available (which is not always the case).

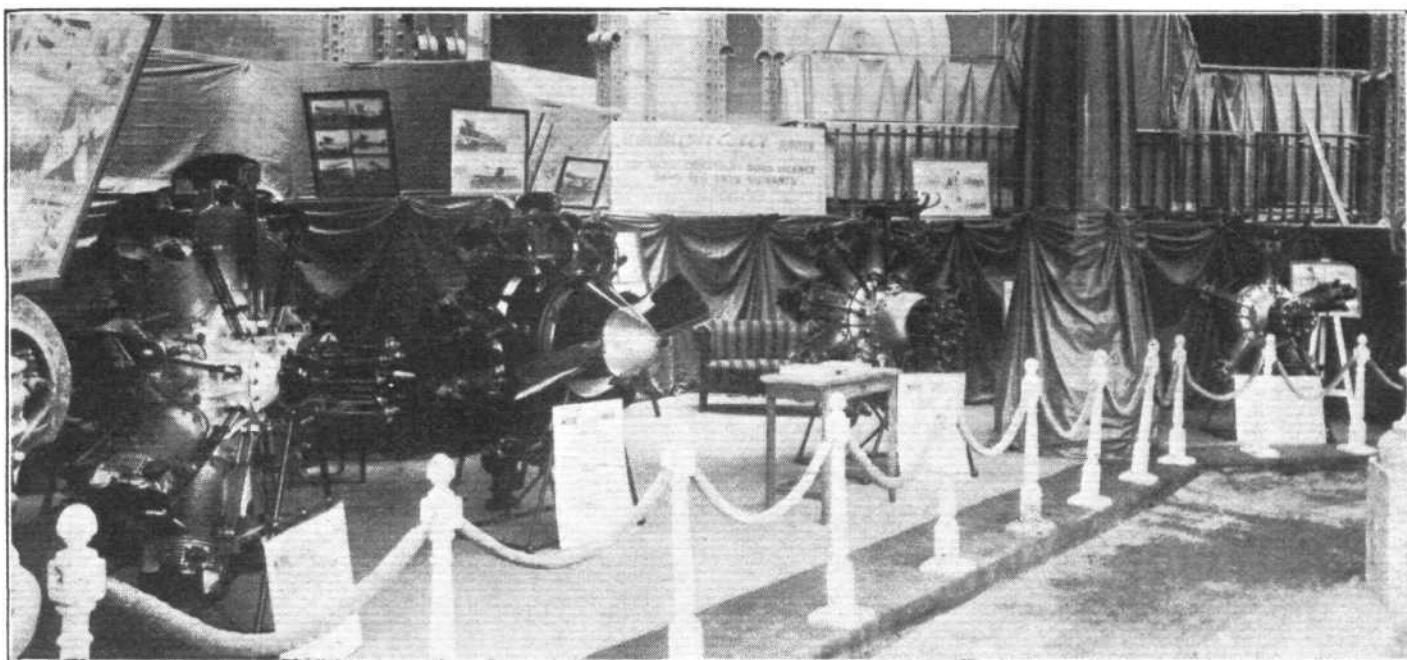
COMMERCIAL AIRCRAFT TYPES

American influence is making itself felt already in France, judging by the proportion of commercial aircraft exhibited which are of the high-wing monoplane type now so popular in the U.S.A. Up to the present the type has not come into actual production in England, but it is known that



BRITISH AERO ENGINES AT THE SHOW : The Armstrong-Siddeley Stand.

[*"FLIGHT"* Photograph]



BRITISH AERO ENGINES AT THE SHOW : The Bristol Stand.

["FLIGHT" Photograph]

several firms are contemplating the marketing of such types, and thus it may be of interest to examine what has been done by France in this direction.

The Bernard 191 T

It would scarcely be correct to say of the 191 T exhibited by the *Société des Avions Bernard* that it shows traces of American influence. Rather does the machine remind one of certain German monoplanes, and is obviously a direct descendant of the "Jean Hubert" monoplane, which established a world's record for speed over 1,000 kms. with a load of 1,000 kg. (2,200 lbs.). Of all-wood construction, the machine is a high-wing cantilever monoplane, with fuselage of good streamline form and very "clean" exterior. Both wing and fuselage are covered with wood planking. The machine is exhibited with a "Jupiter" engine, but as various engine mountings have been

standardised, other types can be supplied if desired. The petrol is contained in tanks in the wing, let in flush with the surface, and feed is by gravity.

The cabin arrangement is somewhat unusual. A *conduite interieure* cockpit is provided for the pilot, ahead of the leading edge of the wing. Immediately aft of the cockpit is a small cabin with but two seats, walled off from the main cabin which has seating accommodation for six passengers. The "honeymoon couple" compartment has a door in the starboard side, and also communicates with the main compartment, the door of which is in the port side. Aft of that is the lavatory. The seats of the show machine are upholstered in "snake skin," and might possibly tend to give nervous passengers "the creeps."

When fitted with the 420 h.p. Gnome-Rhone "Jupiter" the machine has the following characteristics: Wing span, 17.3 m. (56 ft. 9 in.); wing area, 42.9 m.² (462 sq. ft.);



THE LARGEST COMMERCIAL AEROPLANE IN THE SHOW : The Farman 1,000 h.p. type F.180 has seating accommodation for up to 22 passengers.

length, 12.5 m. (41 ft.); weight, empty, 1,780 kg. (3,920 lbs.); fuel and oil, 440 kg. (968 lbs.); pilot, 80 kg. (176 lbs.); pay load, 1,000 kg. (2,200 lbs.); total loaded weight, 3,300 kg. (7,264 lbs.); range, 1,000 km. (620 miles); maximum speed, 220 km./h. (136.7 m.p.h.); cruising speed, 195 to 200 km./h. (121 to 124 m.p.h.); landing speed, 90 km./h. (56 m.p.h.); climb to 1,000 m. (3,280 ft.)



[“FLIGHT” Photograph

A LONG-RANGE MAIL CARRIER : The C.A.M.S. 53 twin-engined flying-boat, like so many modern French machines, has the pilot's cockpit enclosed.

in 7 mins.; climb to 2,000 m. (6,560 ft.) in 16 mins.; climb to 3,000 m. (9,840 ft.) in 29.5 mins.; ceiling, 4,000 m. (13,130 ft.).

Breguet 280 T

Of typical Breguet all-metal construction, the 280 T is a sesquiplane with a large fuselage to give cabin and goods space. The example exhibited is equipped with a Renault geared engine of 500 h.p., but other types can be fitted if desired, such as the “Jupiter” or “Lorraine.” The cabin appears very roomy and comfortable, and the seats are of somewhat unusual type, with the padded back rests mounted on two leaf springs. The cabin dimensions are:

Length, 4.23 m. (13.86 ft.); width, 1.85 m. (6.07 ft.); height, 1.8 m. (5.9 ft.). The pilot's cockpit is placed ahead of the top plane leading edge, and is provided with a “conservatory” roof, as in a number of commercial monoplanes.

The machine has seating accommodation for eight passengers, and is stated to have a range of 1,100 kms. (683 miles) at a commercial speed of 200 kms./hr. (124 m.p.h.), with a petrol capacity of 640 litres (141 gallons). The wing span of the upper plane is 17.25 m. (56 ft. 7 in.), and the wing area 55.86 m.² (600 sq. ft.). When fitted with the geared Renault engine, the tare weight is 1,735 kg. (3,820 lbs.), and the disposable load 1,580 kg. (3,475 lbs.). With the “Jupiter” the tare weight is decreased to 1,630 kg., and the disposable load increased to 1,670 kg. (3,675 lbs.), the permissible total loaded weight being about 3,320 kg. (7,300 lbs.). In spite of the relatively heavy wing loading (12.16 lb./sq. ft.), the Breguet 280 T is credited with a climb to 3,000 m. (9,850 ft.) in 21 mins. The ratio of disposable load to tare weight is rather remarkable, being approximately 1 in the case of the “Jupiter”-engined machine.

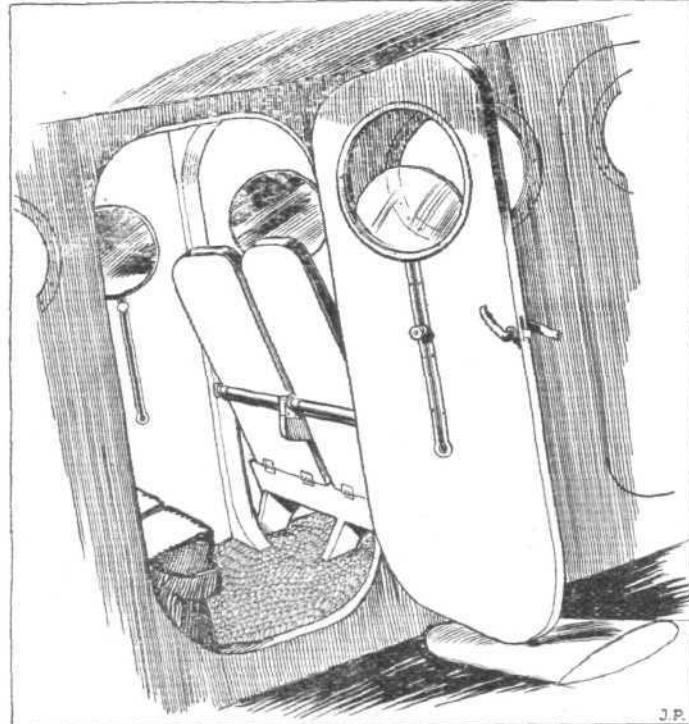
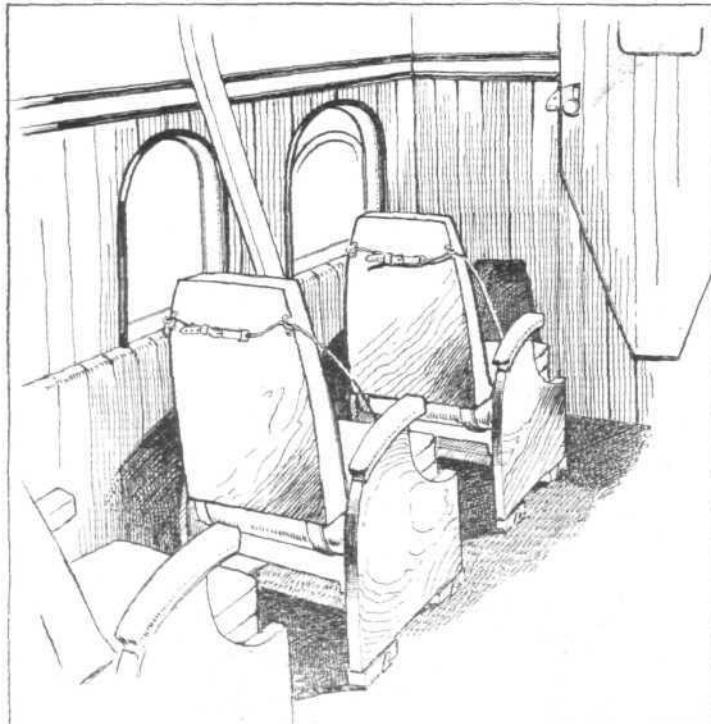
The C.A.M.S. 53

Described as a “Hydravion Postal à Grand Rayon d’Action,” the C.A.M.S. 53 is a twin-engined flying-boat of rather pleasing lines, showing a two-step hull which approaches more nearly to the planing surfaces found on British flying-boats than one usually finds on French machines. It has not the flaring chines which we usually employ, but the rounded Vee of the steps is an improvement on the flat “box” type of hull, to which some designers still adhere. In the C.A.M.S. 53, the sides of the hull are slightly rounded, *i.e.*, the maximum beam occurring some distance above the chines.

The two 500-h.p. geared Hispano engines are placed in tandem under the top plane, and the pilot's cockpit in the front part of the hull is arranged *en conduite intérieure*. The machine has a span of 20.4 m. (67 ft.), and a wing area of 115 m.² (1,238 sq. ft.). The tare weight is 4,070 kg. (8,950 lbs.), and the disposable load (*i.e.*, fuel and useful load) is 2,210 kg. (4,860 lbs.), giving a total loaded weight of 6,280 kg. (13,810 lbs.). A top speed of 210 kms./hr. (130 m.p.h.) is claimed for the machine, and a range of 1,000 kms. (620 miles), but it is not stated what pay load is carried for that range.

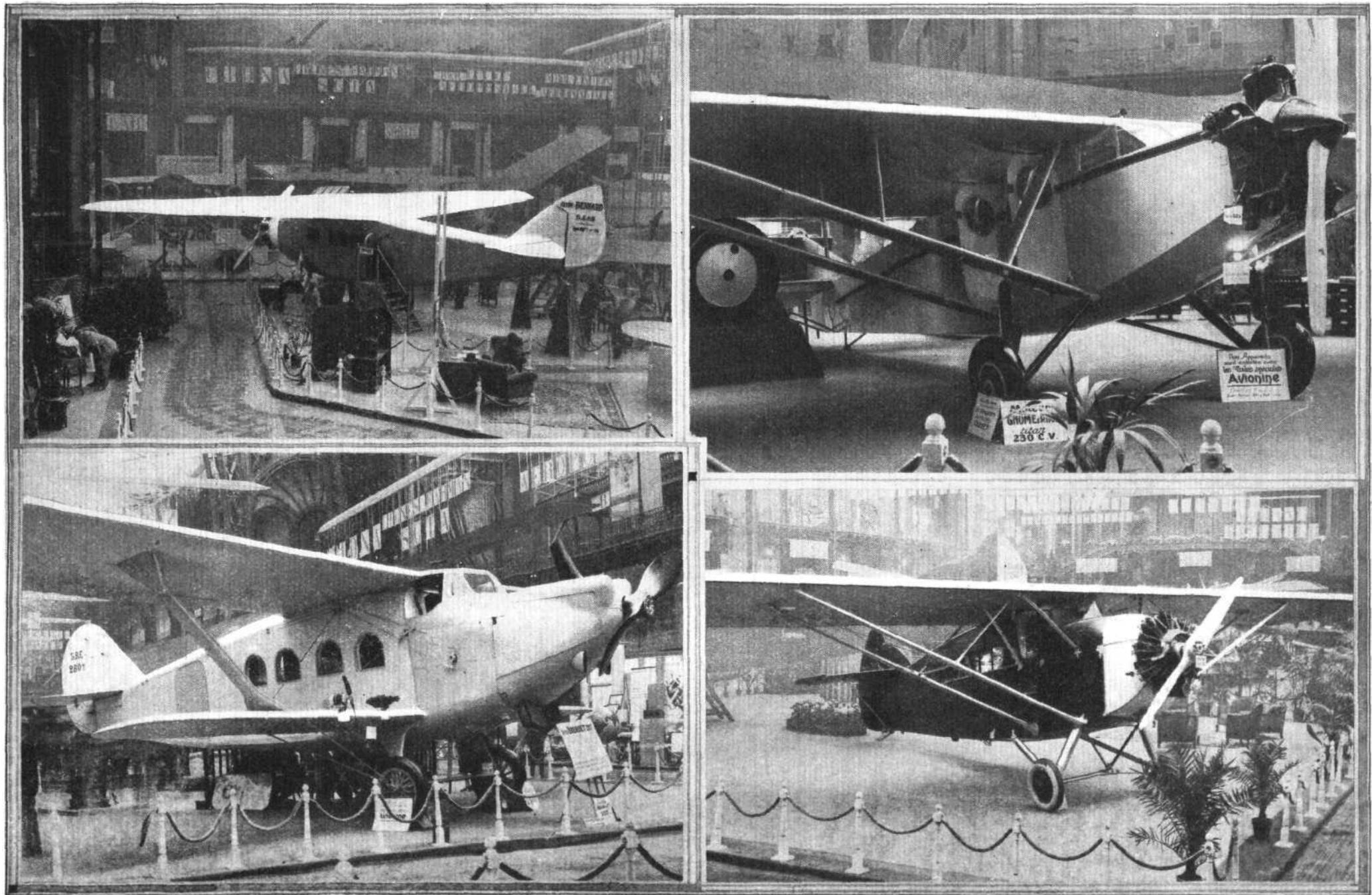
The Farman Machines

Strictly speaking, only one of the two aeroplanes exhibited by the Farman Brothers is a complete machine, the large twin-engined biplane being shown with wing stumps only,



[“FLIGHT” Sketches

TWO INTERIORS : On the left, the cabin of the Breguet 280 T. The backs of the seats are supported on two leaf springs. On the right, a peep into the little Farman four-passenger monoplane. Note the method of raising and lowering the window.



COMMERCIAL TYPES OF AIRCRAFT AT THE PARIS SHOW : Above : left, the Bernard monoplane ; right, the small Farman four-passenger monoplane. Below : left, the Breguet 280 T. ; right, the Potez 32.

the great span of the complete wing cellule taking up too much space for exhibition purposes. This machine, the type F. 180, is a very large biplane of the usual Farman mixed construction (wood and metal), and the main feature in its design is the central placing of the two engines in tandem in the top plane. The machine has been contemplated both as a carrier of great loads over stages of 500 kms. (300 miles) or so, and as an economical carrier of smaller loads over greater distances. Thus the commercial loads corresponding to stages of 500 kms. (310 miles), 1,000 kms. (620 miles), and 1,500 kms. (930 miles) are 2,500 kg., 2,000 kg., and 1,500 kg. (5,500 lbs., 4,400 lbs., and 3,300 lbs.), respectively.

The monocoque construction of the fuselage gives a very clear and unobstructed interior, in which, when the machine is to be used for 500-km. stages, there are 22 seats. If to be used on a route with 1,000-km. stages, the cabin is furnished with 17 seats convertible into couches. Finally, for 1,500-km. stages, the cabin is furnished with 12 berths in the manner of a sleeping car on a train. At the exhibition the various forms of equipment are shown in the one fuselage.

The wing span of the Farman F. 180 is 26 m. (85 ft.), and the total wing area 172 m.² (1,850 sq. ft.). Fitted with two Farman 12 WE engines of 500 h.p. each, the tare weight of the machine is 4,500 kg. (9,900 lbs.). With a crew of two, wireless and other equipment, etc., this is increased by 200 kg. (440 lbs.). The total loaded weight is 8,000 kg. (17,600 lbs.), the fuel weight for the three lengths of stages being 800 kg. (1,760 lbs.), 1,300 kg. (2,860 lbs.), and 1,800 kg. (3,960 lbs.) respectively.

The maximum speed is given as 190 km./hr. (118 m.p.h.), and the cruising speed as 170 km./hr. (106 m.p.h.). With full load, the ceiling is 4,000 m. (13,100 ft.), and it is stated that the machine will fly with one engine stopped, provided the loaded weight does not exceed 7,000 kg. (15,400 lbs.).

Designed for "family touring" or light commercial work, the Farman F. 190 is a high-wing strut braced monoplane of the popular American type, with *conduite interieure*, and seating accommodation for four passengers. The engine is one of the new Gnome-Rhone 230-h.p. "Titan" models. This little

machine is of very neat and clean appearance, and should have a variety of uses. Its main dimensions are: Span, 14 m. (45 ft. 11 in.); length, 10 m. (32 ft. 10 in.); wing area, 39 m.² (420 sq. ft.). Tare weight, 750 kg. (1,650 lb.); fuel, 300 kg. (660 lb.); useful load, 550 kg. (1,210 lb.). Total loaded weight, 1,600 kg. (3,520 lb.). Maximum speed, 185 km./h. (115 m.p.h.); absolute ceiling, 5,400 m. (17,700 ft.). Normal range, 800 km. (500 miles). The ratio of load carried to tare weight is remarkable, i.e., 1·13, and one rather wonders how such a low structure weight is attained with a monoplane wing.

The Henry Potez 32

Of very similar purpose to the Farman F. 190, the type 32 exhibited by Henry Potez appears a much larger machine, although this is possibly an optical illusion, both being designed to carry four passengers, but the fuselage of the Potez being rather deeper than that of the Farman machine. The actual overall dimensions are very nearly identical. With a "Weyman body" finish, the Potez 32 looks a very smart piece of work, and the figures given for its tare weight are more reassuring than those given for the small Farman, being 950 kg. (2,090 lb.) as compared with 750 kg. (1,650 lb.). The cabin appears very comfortable, and shows the usual arrangement, with pilot's cockpit enclosed. There are four seats in the cabin, and one next to the pilot, while aft of the cabin is a lavatory.

The strut bracing of the Potez 32 is perfectly triangulated, and is entirely independent of the undercarriage. The engine is a Salmson A.B.9 of 230 h.p.

The main dimensions of the Potez 32 are: Length, o.a., 10·5 m. (34 ft. 5 in.); wing span, 14·5 m. (47 ft. 7 in.); wing area, 36·2 m.² (390 sq. ft.). The tare weight is 950 kg. (2,090 lb.), and the load carried is: Fuel, 200 kg. (440 lb.); useful load, 600 kg. (1,320 lb.); total load carried, 800 kg. (1,760 lb.); total loaded weight, 1,750 kg. (3,850 lb.). Top speed at ground level, 190 km./h. (118 m.p.h.); cruising speed, 160 km./h. (100 m.p.h.). Range at cruising speed, 800 km. (500 miles).

(To be concluded.)

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

KING'S CUP AIR RACE

The race for the King's Cup will take place on Friday and Saturday, July 20 and 21.

Start at Hendon Aerodrome, Friday, July 20.—The competitors will be started in accordance with their handicap allowances, the first leaving at 8 a.m.

Members will be admitted free to Hendon Aerodrome on production of their membership badges.

Finish at Brooklands, Saturday, July 21.—The finish of the race will be at Brooklands Aerodrome, Weybridge, and the winner is expected to arrive at about 5 p.m.

Capt. Loewenstein

WHILST making one of his many cross-Channel flights last week to the Continent from Croydon on his Fokker monoplane, piloted by Capt. D. Drew, Capt. Loewenstein, the Belgian financier, disappeared when about 5 miles from the coast of France. It was assumed that he fell through the doorway at the side of the fuselage when passing from the cabin to the rear. Travelling with him was his usual business retinue, a secretary, two typists, and also his valet, who made the discovery when he failed to return to the cabin. Capt. Drew immediately circled the sea and then made a landing on the coast to report the affair to the police. Tests have been made with machines since to prove the possibility of a man being able to open the cabin door in flight, and it has shown to be very difficult, although it has been stated that the door in the Capt. Loewenstein's machine had been opened in flight before.

Coastal Flying-Boat Services

THE flying-boat or seaplane has been, comparatively, seldom employed in this country for commercial work such as passenger services or joy-riding—in spite of the fact that

The Junior Car Club 200-mile race is taking place at Brooklands the same afternoon.

The Royal Air Force, by kind permission of the Air Council, will give displays during the afternoon.

Members will not be admitted free to Brooklands on this occasion.

The charges for admission will be as follows:—Public enclosure, 3s.; paddock and reserved parts of flying ground, 10s. Motor cars: Public enclosure, 5s.; paddock, 10s.

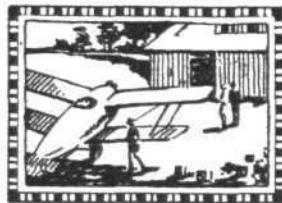
Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

this class of aircraft is particularly suitable for such work in this island of ours. We are pleased to learn that a new venture in civil aviation employing flying-boats has just been launched. This is known as "Coastal Flying-Boat Services," the proprietor of which is Mr. Frank H. Winn, of Hove, Sussex, who has inaugurated a flying service from Brighton to towns and ports on the south coast. Supermarine "Seagull" amphibians, fitted with Napier "Lion" engines and carrying six passengers, are employed. A bi-weekly service from Brighton to Dieppe and Le Touquet will also be run, while a special machine is kept to convey passengers to and from outgoing and incoming ocean liners. Mr. Cristoval Regidor is the general manager of this concern and Mr. T. W. Goodban is the chief ground engineer, there being a staff of fully licensed pilots.

Newspaper Aeroplane

THE *Daily Mail* will shortly take delivery of its own aeroplane to be used for transmitting quick news and pictures. The machine is a D.H.61 Bristol "Jupiter", and it will have a dark room in which developing can be done whilst in flight.

PRIVATE



FLYING

A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

PRIVATE OWNERS AT BLACKPOOL

THE aerodrome at Squires Gate, Blackpool, is large and conveniently situated to the town. It is on the south side, and possesses a grand stand, but has no apparent sheltered accommodation for machines. It is but a temporary aerodrome, however, although one learned indirectly that about £5,000 had been spent upon it. The town is planning to construct a fine large aerodrome of about 600 acres in extent, for which land will be acquired at roughly a mile from the town if a Bill to be presented to Parliament shortly is passed. It is possible that part of the landing area will be flooded and used for seaplanes and flying-boats. Although the meeting was threatened with wretchedness owing to the preliminary weather, there was a complete and rapid change, and the best conditions remained until the finish. The lady private owners did exceptionally well. Amongst them were Miss O'Brien, Miss Spooner, Miss Leathart, Lady Heath, and Miss Brown. The *Daily Dispatch* Nomination Handicap was won by Miss O'Brien, who intends to compete in the coming Rotterdam air meeting. Miss W. S. Brown, of the Lancashire Club, carried off the Open Handicap, at 99½ m.p.h. on her own Avro "Avian III." The finals brought very close results, Miss Brown only scraping in by 2 secs., whilst Miss O'Brien, on her D.H. "Moth I," won by just 1 sec. Miss Leathart's Sopwith "Grasshopper" won its first heat in the *Daily Dispatch* race, but was only placed fourth in the final. The crash of the Parnall "Imp" ("Genet") in the same event was particularly unfortunate, for it was starting the meeting well, carrying off the Blackpool Nomination Handicap at 100 m.p.h. It averaged 110 m.p.h. when winning its heat in the Open Handicap. Mr. Norman Jones got the Owner Pilots' Handicap on his D.H. "Moth" ("Cirrus") at 97 m.p.h., thus sustaining the general performance of the private owners.

Lady Heath now flies a D.H. "Moth" again since she sold her Avro "Avian" to Miss Earhart, after flying from Cape Town to London on it solo. Her "fleet" fluctuates constantly. One period, just before her departure for South Africa last year, she owned four machines; now it is reduced to one for practical purposes. The S.E.5, which she raced last year, is without an engine. Her altitude record on July 10 on the Short "Mussel" seaplane ("Cirrus"), when 13,400 ft. was reached, with Miss O'Brien as passenger, was a better performance than she anticipated by about 3,000 ft. For a few weeks prior to the attempt she had been taking lessons with Mr. Lankester Parker on the "Mussel."

The flying clubs, Yorkshire and Suffolk, are feeling very disheartened by their run of bad luck in racing that has prevailed for a long time. They say that they have won nothing since the late Sqdn.-Ldr. Longton got the Grosvenor Cup a few years ago, since when, some members believe,

their machines have been looked upon as dark horses and penalised accordingly. It is disheartening to Capt. Beck and Mr. Lowdell, the instructors, for naturally they care conscientiously for the prestige of their clubs and they do not feel happy to find them last at every meeting. What the cause of the trouble is it is difficult to say. We believe that some members have voiced their experience to the handicappers, expressing the conviction that, for instance, they should not have to give a Mark I "Moth" a start nowadays. They feel that they are suffering for the triumphs that attended their machines when they first started racing. In windy weather they think that to attend a meeting is mis-spent energy and time, but they carry on because they are a sporting crowd. The reason for their experience may be as a Yorkshire member pointed out—that their machines are maintained primarily for school work (they do not keep one standing by purely for racing), so that they enter races straight from the school grind. Mr. Lowdell won himself into three finals at Hamble this year where the weather was more suitable for him, but then could only get one second.

Maj. Cordes, of the Handley Page Company, who flew the slotted-wing D.H. "Moth" at Blackpool, has lately been co-operating with Sqdn.-Ldr. England in the European demonstration of the device. It is the natural policy to allow European pilots to test the machine for themselves in each country. In Italy he found, like all visitors, a tremendous enthusiasm for aviation and a good impression of the "slotted wing."

A new feature during the Blackpool meeting was the erection of a large weather chart indicating the weather conditions in various parts of Great Britain. This useful work was the introduction of the Automobile Association at flying meetings. The board was in the hands of their representatives who received fresh weather reports at various periods of the day and changed the symbols accordingly, so that any departing pilot knew the weather in any of the general directions. Machines arriving at the meeting were also cared for by the A.A. in a special park, if not desired for racing. This was done free of charge and, we understand, for any pilot. About a dozen light aeroplanes were so accommodated.

There must have been between 50 and 60 light aeroplanes there altogether, representing every type, most of the clubs and a good percentage of the private owners. They were obliged to moor in the open all night, however.

The Lancashire Aeroplane Club did a great service to the organisers by acting as officials on the ground, and, due to their energy, the events were run through with hardly a pause. No one got tired of waiting for the next event, despite the number that had to be fitted in.

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W. 1.

Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Capt. C. F. G. Crawford, Filton Aerodrome, Patchway.

Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.

Lancashire Aero Club, Woodford, Lancs. Secretary, C. J. Wood, Oakfield, Dukinfield, near Manchester.

Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-on-Tyne Aero Club, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.

Norfolk and Norwich Aero Club, Mousehold, Norwich. Manager, F. Gough, The Aerodrome, Mousehold, Norwich.

Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria Street, Nottingham.

The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.

Southern Aero Club, Shoreham, Sussex. Secretary, C. A. Boucher, Shoreham Aerodrome, Sussex.

Suffolk Aeroplane Club, Ipswich. Secretary, Maj. P. L. Holmes, The Aerodrome, Hadleigh, Suffolk.

Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for week ending July 8.—Flying time, 47 hrs. 5 mins. Dual instruction, 25 hrs. 35 mins.; solo flying, 21 hrs. 30 mins.

Solo Flying: J. J. Hofer, J. H. Brewster, F. C. Fisher, J. C. V. K. Watson, S. Nesbitt, G. Larden, E. R. Andrews, P. A. Wills, R. Sanders Clark, P. W. Hoare, Maj. R. M. S. Veal, H. M. Samuelson, J. H. Saffery, E. E. Stammers, Maj. K. M. Beaumont, Will Hay.

Dual Instruction: R. S. Rattray, E. H. Thierry, J. Bickley, E. G. Amsden, L. Rowson, J. Eden, Miss H. Cholmondeley, Miss Wilson, H. W. Marlow, A. C. Collins, P. A. Wills, W. Hart, C. W. Bonnicksen, D. H. M. Symon, J. R. A. Stroyan, B. Carey, Miss Hicks, R. Maurice, B. L. Middleton, E. A. Lingard, A. C. Thomas, Mrs. Thatcher, H. R. Presland, G. Larden.

King's Cup and Siddeley Trophy Tour.—The first competitor will leave Hendon Aerodrome at 8 a.m. on Friday morning, the 20th instant. Members

of the London Aeroplane Club will be admitted free to Hendon Aerodrome on production of their membership badges.

Finish at Brooklands.—The finish of the race will take place at Brooklands Aerodrome on Saturday, July 21, and the winner is expected to arrive at about 5 p.m.

The Junior Car Club 200-mile Race is taking place at Brooklands the same afternoon, and the Royal Air Force will give displays during the afternoon. Members will not be admitted free to Brooklands Aerodrome. The charges for admission will be: public enclosure, 3s.; paddock and reserved parts of flying ground, 10s.

BRISTOL & WESSEX AEROPLANE CLUB, LTD.

REPORT for week ending July 7.—Details of flying hours, instruction, etc., will be included in next week's report.

The weather has been unfavourable for much flying during the week.

Mr. Bartlett, accompanied by Mr. J. Huggett, left in GEBTY for Blackpool, where he won the Individual Aerobatics Competition. We congratulate him heartily on his success. Mr. A. H. Downes-Shaw flew to Blackpool in GEBST on Saturday morning to attend the meeting.

The new slotted-wing Moth, GEBYH, arrived on Saturday, and several members flew it under Mr. J. E. Tratman's instruction.

CINQUE PORTS FLYING CLUB

REPORT for week ending July 7.—Machine de H. Moth G: E.B.W.C. Total time, 17 hrs. Test flight, 10 mins.

Joy-rides with Maj. Clarke: Miss Miles, Mrs. Snell, Miss Attwood, Mrs. Harris, Mrs. Davenport, Miss Gipps, Messrs. Drummond, Butt, Edwards, Street and Burren, 10 mins. each; Mr. Parks, 15 mins.

Dual Instruction with Maj. Clarke: Miss Allen, 1 hr. 30 mins.; Miss Tagart, 1 hr. 30 mins.; Mr. S. Glynn, 1 hr. 30 mins.; Mr. Everden, 15 mins.; Mr. Gunner, 30 mins.; Mr. Boys, 30 mins.; Mr. Story, 15 mins.; Mr. Edgson Wright, 1 hr. 15 mins.; Mr. Swinnard, 1 hr.; Capt. Took, 45 mins.

Soloists: Mr. Douglas, 2 hrs. 45 mins.; Mr. Story, 30 mins.; Mr. Edgson Wright, 1 hr.; Mr. R. Dallas Brett, 30 mins.; Capt. G. E. Took, 1 hr.

On Sunday, July 1, Mr. Edgson Wright, an ex-R.F.C. pilot, completed his tests for "A" licence, and was followed by two *ab initio* pupils, Mr. Story of Hythe, and Mr. R. Dallas Brett, of Hythe.

On Monday, July 2, another *ab initio* pupil, Lieut. A. V. C. Douglas, of the Guards' Depot, Canterbury, completed his tests. Mr. Douglas put up an exceedingly good performance under some difficulties, owing to low clouds and the presence of a strange Moth which baulked him as he was coming in to land. All these four members also passed their *viva voce* examination in air navigation, etc. We regard this as a very good performance after six weeks' work with one machine.

On Wednesday, July 4, the aerial golf match between Mr. Edgson Wright, a partner, and two members of the Ashford Golf Club took place, over a course of six holes. We are glad to report that the club won the match by one stroke. Mr. Wright's "drop shots" being exceedingly accurate.

Visitors during the week included Miss S. O'Brien in her Moth O.S. and Dr. Merton in his slotted Moth Q.Z., also a very smart Moth belonging to the Communications Squadron, R.A.F.

On Saturday, July 7, Capt. Took was tactless enough to taxi our Moth along the ground at a great velocity into one of the permanent hangars on the aerodrome. The hangar proved to be far more permanent than the Moth, which looks uncommonly like a total "write off." Fortunately, Capt. Took stepped out unhurt.

HAMPSHIRE AEROPLANE CLUB

REPORT for week ending July 7.—Total flying time, 18 hrs. 45 mins. Dual instruction, 11 hrs. 55 mins.; "A" pilots, 5 hrs. 5 mins.; solo, 55 mins.; Passenger flights, 25 mins.; Tests, 25 mins.

Report for month of June.—Total flying time, 122 hrs. 25 mins. Dual instruction, 37 hrs. 45 mins.; "A" pilots, 42 hrs. 15 mins.; Solo, 25 hrs. 55 mins.; Passenger flights, 13 hrs. 25 mins.; Tests, 3 hrs. 5 mins.

Instruction (with Flight-Lieut. Swaffer): Mr. Scott-Hall, Graham-Gibbs, Craske, Maj. Jenkins, Mr. Nash, Miss Melville, Dr. Russell, Dalyrymple-Smith, Tillard, Mr. Hall, Mrs. Crook, Richardson, Donner, Westlake, Wills.

"A" Pilots:—Capt. Kirby, Hayter, Miss Grace, Collier.

Soloists:—Mr. Tillard.

Passengers:—Mr. Sutherland.

The weather has been unkind to us, and when it was possible to fly, our last machine was placed on its nose on the aerodrome.

Mr. Watson had landed and lost his propeller, and apparently when trying to catch it he opened the throttle and left it open. He started up the engine again, and the result may well be imagined. He attempted to stop it and was seen to disappear under the plane, when the machine was upside down. Someone said Watson was hurt and thought he heard the chief instructor say he hoped he was, but this has been denied. The Avian engine was having a complete overhaul, and so we became a non-flying club. This was unfortunate, as we were unable to send a machine to Blackpool to compete in the events there. The ground engineer, by working day and night, managed to let us have the Avian again by Saturday, and so the club assumed some of its usual activity again.

Col. de Bernardi, of the Italian Air Force, has been in Hamble, and flew the Avro Avenger. This was not exciting enough apparently for he came to the club and flew the Moth.

Mr. Scott-Hall successfully carried out his height test for his "A" licence. He has not offered to buy us a new Moth!

Members of this Club are keenly interested to note that a mystery light aeroplane has been entered for the King's Cup Race by Mr. O. E. Simmonds, our managing director. It is understood that this aircraft is designed on original lines and contains several features which are quite new. It has been designed and constructed entirely by Mr. Simmonds and we believe that its appearance will cause great interest in flying circles. The machine is known as the "Spartan" and is fitted with a Mark II Cirrus engine. Further details are not available at the moment as the machine has been constructed under conditions of such secrecy that until a day or two ago not half-a-dozen people knew that Mr. Simmonds was working on it.

Another of our members, Capt. H. M. Yeatman, has entered his Moth for the Siddeley Trophy Tour, and we wish both these gentlemen the best of luck.

MIDLAND AERO CLUB LIMITED

REPORT for week ending June 30.—Total flying time, 26 hrs. 37 mins. Number of members given dual instruction by Flight-Lieut. T. Rose, D.F.C.; and Mr. W. H. Sutcliffe, 15. Solo, 13. Passenger flights were given to six members.

On Monday, Mr. S. Nesbit passed all tests for his "A" licence.

REPORT for week ending July 7.—Total flying time, 26 hrs. 24 mins. Dual, 11 hrs.; Solo, 9 hrs. 6 mins.; Passenger, 5 hrs.; Tests, 1 hr. 18 mins.

The following members were given dual instruction by Flight-Lieut. T. Rose, D.F.C., and Mr. W. H. Sutcliffe:—L. V. Mann, J. Cobb, W. Westwood, W. M. Morris, R. Welch, H. Tipper, G. C. Jones, M. Turner, M. A. Murtagh, O. L. Richards, H. Coleman, H. Lattey, S. Duckitt, F. J. Steward, S. H. Smith, H. C. Baxter Capt. H. G. Tower.

Solo:—H. Lattey, S. Duckitt, O. L. Richards, G. Robson, E. D. Wynne,

H. J. Willis, E. J. Brighton, R. L. Jackson, R. D. Bednell, C. W. Fellowes, W. M. Morris, H. Tipper.

Passengers:—Dr. Johnson, C. Eckersley, A. Methley, R. E. Cooke, J. W. Astley.

On Thursday, Flight-Lieut. Rose flew LW to Blackpool.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending July 4.—Total flying time, 20 hrs. 50 mins. Instruction, 4 hrs. 15 mins. Solo, 4 hrs. 45 mins. "A" pilots, 8 hrs. 45 mins. Passengers, 2 hrs. 20 mins. Tests, 45 mins.

Instruction, with Mr. J. D. Parkinson: Mrs. Kish, Miss Slade, Messrs. Carr, Maxwell, Lawson, Walker, Vernon, Heaton, Runciman (secondary).

Solo: Messrs. Jackson and Maxwell.

"A" pilots: Messrs. Irving, Todd, H. Ellis, W. B. Ellis, Heppell, Turnball, Leech, A. H. Bell, R. N. Thompson, and Dr. Dixon and C. Thompson.

Passengers, with Mr. Parkinson: Mrs. Gregorson. With Mr. Leech: Mr. John Bell. With Mr. A. H. Bell: Mr. J. S. Robertson.

We are pleased to report that on Wednesday Mr. A. Maxwell, successfully carried out the tests for his "A" licence. On Thursday the club's three Moths accompanied by Miss Leathart on the Grasshopper, left for Blackpool flying meeting. We take this opportunity of congratulating Dr. Dixon on his very fine performance in winning the Inter-Club Members' Race. All the club members who attended the Blackpool meeting appeared to enjoy themselves to the full. We are looking forward to renewing acquaintance on July 20, when the competitors for the King's Cup and Siddeley Trophy call at Cramlington.

NORFOLK & NORWICH AERO CLUB

REPORT for week ending July 7.—Total flying time, 32 hrs. 40 mins. Instruction with Mr. Young: Messrs. C. Ransome, A. Richardson, C. Mills, A. Marshall, A. Harvey, A. Kirkby, D. Corsellis, C. Ansitis, A. Finch, T. Image, H. Neave.

Soloists:—Messrs. G. Barker, A. Marshall, E. Varden Smith, E. Lambert, R. Harmer, A. Cooper, W. Ramsay, F. Gough, G. Surtees, H. Clarke, R. Moore, A. G. Loft, A. Pank, W. Cubitt, R. Potter, H. Neave, D. Brett.

Passengers, 13.

Messrs. Neave and Marshall are heartily congratulated on their first solos this week. They put up a splendid show, and both landings were a treat to watch.

Messrs. Gough and Surtees also "soloed" this week—only they went off to Blackpool, telephoned their safe arrival at Castle Bromwich, and then we heard nothing more of them until Sunday afternoon at 4 p.m., when they performed aerobatics over our heads, shook their tail, and very kindly gave us back our aeroplane which they had at the moment no further use for, both being married. However, boys will be boys, so they say, and there will be no court-martial this time.

We are going to show the inhabitants of Thetford what flying is on Thursday, and our Suffolk neighbours are going to give them their version of flying, so it should be interesting. Thetford is an ancient borough the handbooks tell us, and it really does look ancient. We are going all out to rejuvenate it without the help of monkeys or anything—just Moths, Avians and Bluebirds (not Bluebeards).

SUFFOLK AND EASTERN COUNTIES AEROPLANE CLUB

REPORT for week ending July 7.—Flying time, 15 hrs. 20 mins. Instruction, 9 hrs. 30 mins. "A" and "B" pilots, 2 hrs. 15 mins. Soloists, 1 hr. 25 mins. Passenger flights, 1 hr. 25 mins. Tests, 45 mins.

Passengers, with Mr. Lowdell, 7.

Dual instruction: Dr. Mildred Yate, Mrs. Young, Miss E. Edwards, Dr. Dunn, Messrs. Goodwin, Billington, Wedd and Peck.

Solo, under instruction: Messrs. Billington and Peck.

"A" and "B" pilots, Mr. Schofield.

This report only covers the period up to Wednesday evening. On Thursday Mr. Prentice and Dr. Sleigh flying RE, and Mr. Lowdell in SZ, left for the Blackpool Flying Pageant.

On Thursday next the club is co-operating with the Norfolk and Norwich Club in an air display at Thetford in connection with the civic week.

YORKSHIRE AEROPLANE CLUB

REPORT for week ending July 8. Flying time, 32 hrs. 50 mins. Instruction, 7 hrs. 40 mins. Solo, 24 hrs. 10 mins. Passengers, 1 hr.

Instruction, with Capt. Beck: Messrs. Lievans, Parks, Bell, J. Blackburn, Evans, Wilton, A. Crowther, Brown, Rowley, Watson, Dujardin, Ellison, Mayton, Fitton.

Soloists: Messrs. Dick and Reynolds.

"A" pilots: Messrs. Ellison, Dawson, A. Crowther, H. Crowther, Lister, Thomson, Birch, Humphries, Ambler, R. Lax, Wilson, Clayton, Norway, Wood.

"B" pilot: Mr. Fielden.

Passengers, 6.

At home we have had an uneventful week, and on Thursday proceeded to Blackpool for the Northern Pageant. The high winds prevailing on Friday rendered it impossible for our "squat-nosed" little Bluebirds to keep pace with their slimmer rivals.

On Tuesday last Mr. Reynolds executed his "A" licence tests with remarkable skill considering the time he has been flying.

FROM THE FLYING SCHOOLS

The De Havilland Flying School, Stag Lane Aerodrome

REPORT for week ending July 8.—Total flying hours, 165 hrs. 40 mins. Instruction (dual), 90 hrs. 30 mins.; (solo), 31 hrs. 55 mins. Other flying, 33 hrs. 15 mins.

We have now commenced a busy period, and in consequence two new "Moths" have been placed on the School and the service of a new instructor has been secured.

The School has now eight "Moths," five Jaguar D.H. 9J, and six instructors at its disposal, together with a most up-to-date pavilion and lecture room.

During the week, four pupils, including Sir Pyers Mostyn, Hon. D. F. Tennant and Mr. W. Coker Iliffe, carried out excellent first solos.

Our new arrivals this week include many Varsity Undergraduates and five Indian Government pupils. Twelve new "Moths" were tested, and amongst purchasers who took delivery this week were Lady Heath and Major A. A. Nathan.

"Moths" were greatly in evidence again at the Blackpool Air Pageant and secured many valuable events.

A notable visitor to Stag Lane this week was Herr Fieseler, the famous German "stunt" pilot.

Henderson Flying School, Brooklands Aerodrome

REPORT, week ending, July 6.—Total flying, 36 hrs.

Dual, with Col. G. L. P. Henderson: Messrs. Brooks, Bennett, Groner. Dual, with Capt. H. D. Davis: Major Parkin, Matos, Davies, Miss Wellby, Groner, Norbury, Jager, Dr. Taylor.

Owing to bad weather, the flying time for this week has been considerably reduced.

Over 200 passengers were carried during the week.

Italian Polar Explorers' Position

THE most recent survey of the position of the "Italia's" crew on the ice floes off Spitzbergen is discouraging. They have expressed their despair in latest wireless messages and the messages themselves have now ceased. Only 30 miles away is the ice-breaker Krassin, thwarted by the ice, whilst land is in view. Of the members who drifted away in the ship after the crash on May 23-4 nothing has since been heard, nor of the group of three who left General Nobile's party to try and reach land. There are about four men left marooned on the floes with Lieut. Viglieri, in command. Capt. Lundborg, who rescued Nobile and was then marooned himself, was rescued recently by another Swedish pilot, in a D.H. "Moth," after a fortnight with the crew. Signor Cecconi, has died from the injuries received when the "Italia" crashed. The others are starving and fever stricken. Many of the food supplies dropped by various rescue aircraft fell into the sea. A seaplane has thoroughly searched North East Land in vain for the party trying to reach land under Dr. Malmgren, and the search is now considered ended. Capt. Amundsen, Maj. Guibaud and Lieut. Dietrichson, who left Tromsø on the Latham flying-boat on June 18, are still missing. Search has been conducted recently in Bear Island Waters.

World's Endurance Record Broken

THE German pilots Risticz and Zimmermann, by remaining in the air for 65 hrs. 25 mins., have beaten the previous record of 58 hrs. 37 mins. established last month by the Italian pilots Ferrarin and del Prete. The two German pilots took off in a Junkers W.33 monoplane (Junkers L.V. engine) on July 5, and, flying over a circuit between Dessau and Leipzig, they landed at Dessau at 9.30 p.m. on July 7.

Capt. Courtney's Atlantic Attempt

CAPT. F. J. COURTNEY, who left Lisbon in a Dornier-Napier flying-boat on June 28 with the object of flying across the Atlantic to Montreal *via* the Azores, has once more been unlucky. He set out from Horta, Azores, at 4.35 a.m. on July 8 for Trepassey, but after a flight of five hours he encountered thick fog and returned to Horta.

"Bremen" Airmen Visit the ex-Kaiser

BARON VON HUENEFIELD, Capt. Koehl and Major Fitzmaurice flew to Utrecht on June 6 to stay with the ex-Kaiser at Doorn. When they flew to Cologne the following day to comply with a programme that had been arranged in their honour they found it cancelled owing to resentment of their visit to the ex-Kaiser.

French Pilot Captured by Moors

M. REYNE, pilot of a French air mail 'plane on the France-South America service, and his wireless operator,

M. Serres, made a forced landing in the Rio del Oro last week, and both were captured by Moorish tribesmen, who are holding the airmen to ransom. This pilot was made prisoner once before in the same locality.

French African Tour Completed

CAPTS. MAULER and Baud, who left Le Bourget on March 2 in a Caudron biplane for an extended flight through Africa, arrived at Cape Town on July 5. They have flown *via* the Guinea Coast, the Belgian Congo, and Rhodesia.

Life Saved by Aeroplane

FLYING-OFFICER E. A. COPP, of the Royal Canadian Air Force, saved the life of a boy recently. The boy, a son of Mr. R. Clarke, of the staff of the provincial air service stationed in the wilds near Lake Oba, Ont., had severed an artery in his arm, and no medical aid being available, was bleeding to death. F.O. Copp, however, happened by chance to descend on the lake, and, learning the boy's plight, immediately conveyed him in the machine to Chapleau, where the boy was successfully treated.

The Aero Club Movement in America

AN organisation has been formed in New York, known as the Aviation Country Clubs, Incorporated, the object of which is to establish a chain of flying clubs throughout the States. The first three clubs to be formed will be located in Long Island, New Jersey, and West Chester County.

New Light Seaplane Record

ON July 10 Lady Heath, accompanied by Miss S. O'Brien, ascended from Rochester in the Short "Mussel" all-metal light seaplane ("Cirrus" engine) in an attempt to create a world's altitude record for the light seaplane class. The flight lasted 1 hr. 50 mins., during which, according to the sealed barograph, an altitude of 13,400 ft. was attained. Lady Heath hopes to try for other records on the same machine.

The Iraq Command, R.A.F.

THE Air Ministry announces that Air Vice-Marshal Sir Robert Brooke-Popham, K.C.B., C.M.G., D.S.O., A.F.C., has been selected to succeed Air Vice-Marshal Sir Edward L. Ellington, K.C.B., C.M.G., C.B.E., as Air Officer Commanding the Iraq Command towards the middle of November next, on completion by the latter officer of two years' service in Iraq.

Air Mails—Extension of Insurance System

THE Postmaster General announces that insured letters, boxes and parcels for Holland, and insured letters and boxes for Switzerland, may now be accepted for transmission by air on the same conditions as for similar articles sent by ordinary routes. (There is already an insured air parcel service with Switzerland.) The usual air fees are, of course payable in addition to postage and insurance fees.



ITALIAN AIRMEN VISIT SUPERMARINES : On June 29 last, a party of officers of the Italian Royal Air Force, shown above, paid a visit to the Supermarine Aviation Works at Southampton. The party included Gen. V. Lombard, Gen. Verduzio, and Maj. Bernardi. Included in the group also are, Com. J. Bird, Mr. R. J. Mitchell, Mr. A. E. M. Hunn and Mr. E. L. Ransome.

THE ROYAL AIR FORCE



London Gazette, July 3, 1928.

General Duties Branch

The follg. Pilot Officers are promoted to rank of Flying Officer:—B. H. Ashton (Jan. 14); D. J. R. Hylton (May 1); V. Q. Blackden, P. M. Watt, A. M. Watts-Read, P. C. I. Elderton, W. N. Blain, G. Francis, G. I. L. Saye, W. J. H. Lindley, J. Marson, P. L. P. Maret, A. R. Sarel (June 11).

Lt. M. Cursham, R.N., Flying Officer, R.A.F., ceases to be attached to the R.A.F. on return to Naval duty (June 17). The short service commissions of the follg. Pilot Officers on probation are terminated on cessation of duty:—M. V. Dyas (June 23); V. B. Lintott (July 1).

Medical Branch

Flying Officer L. Freeman is promoted to rank of Flight Lieut. (July 1); Flight Lieut. E. E. Isaac, M.C., relinquishes his temp. commn. on completion of service and is permitted to retain his rank (July 3).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The follg. are granted commissions in Class A.A. (ii) as Pilot Officers on probation:—T. McDonald, G. Williams (June 15). The follg. Pilot Officers

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Flight Lieutenants: H. V. Pendavis, D.S.O., to Sch. of Army Co-operation, Old Sarum, 15.6.28. H. G. White, to Home Aircraft Depot, Henlow, 19.5.28. R. Harrison, D.F.C., to R.A.F. Depot, Uxbridge, 25.5.28. J. Cottle, M.B.E., D.F.C., to Armament and Gunnery Sch., Eastchurch, 18.5.28. C. E. Williamson-Jones, D.F.C., to Home Aircraft Depot, Henlow, 20.6.28. W. E. Knowlden, to Elec. and Wireless Sch., Flowerdown, 8.6.28. M. W. C. Ridgway, to Home Aircraft Depot, Henlow, 14.6.28.

Flying Officers: R. H. W. Empson, to R.A.F. Practice Camp, Sutton Bridge, 18.6.28. F. Porter, to R.A.F. Base, Gosport, 5.7.28. I. W. C. Mackenzie, to Armament and Gunnery Sch., Eastchurch, 21.6.28. C. I. A. Jackson, to No. 4 Sqdn., S. Farnborough, 18.6.28. J. W. White, to No. 3



Royal Air Force—600 Vacancies for Aircraft Apprentices

THE Air Ministry announces: Six hundred aircraft apprentices, between the ages of 15 and 17 are required by the Royal Air Force for entry into the Schools of Technical Training at Halton, Bucks, and at Flowerdown, near Winchester. They will be enlisted as the result of an Open Competition and of a Limited Competition held by the Civil Service Commissioners and the Air Ministry respectively. Successful candidates will be required to complete a period of 12 years' regular Air Force service from the age of 18, in addition to the training period. At the age of 30 they may return to civil life or may be permitted to re-engage to complete time for pension.

Full information regarding the aircraft apprentice scheme, which offers a good opportunity to well-educated boys of obtaining a three years' apprentice course of a high standard and of following an interesting technical career, can be obtained on application to the Royal Air Force, Gwydyr House, Whitehall, London, S.W.1. Nearly 5,000 aircraft apprentices have already completed their training at the technical schools of the Air Force, and the annual output is in the neighbourhood of 1,000 fully trained aircraftmen.

The Open Competition, for which a fee of 5s. is charged, is open generally to boys within the age limits who forward completed application forms to the Secretary, Civil Service Commission, Burlington Gardens, London, W.1, not later than August 30. The sons of officers, warrant officers, and senior N.C.O.'s of the three services receive special consideration. In their case applications for nomination should be made to the Secretary, Air Ministry, Kingsway, London, W.C.2, not later than August 18.

All candidates for the Limited Competition must receive a nomination before they can attend this examination. These nominations must be received by the Air Ministry from the nominating authorities not later than October 2. If they are still at school, candidates should apply to their headmaster with a view to obtaining a nomination from the Local Education Authorities; if they have left school, application can be made either to the Local Education Authority or to the Advisory Committee for Juvenile Employment in their area. There is no fee for this examination, which is carried out at local centres in each area where boys are nominated.

The principal trades open to boys are metal rigger, a new trade brought into existence by the introduction of the metal aeroplane, which involves training in both fitting, and sheet metal work, fitter (aero engine), fitter, (driver, petrol), coppersmith and metal worker, wireless operator-mechanic and electrician.

The apprentices are given a thorough training in their trade by highly-qualified technical instructors, and their general education is also carried on simultaneously by a staff of graduate teachers.

During the training period, the rate of pay is 1s. a day for the first two years and 1s. 6d. a day thereafter, until the apprentice has both attained the age of 18 and been posted to a unit on completing his training. When he is posted to a unit for duty as an aircraftman, the commencing rate of pay varies from 3s. 3d. to 5s. 6d. a day (22s. 9d. to 38s. 6d. a week), according to the marks obtained in the passing out examination. He also receives free board and lodging. In addition a few apprentices of special promise proceed to the Royal Air Force Cadet College for training with a view to becoming Commissioned Officers. For the remainder, opportunities arise later to volunteer to qualify in flying and become airman pilots. Selection to the number of about 80 is made annually from volunteers of all trades. From amongst airman pilots a few are periodically selected for commissioned rank.



AIR MINISTRY NOTICE

Air Navigation (Amendment) (No. 2) Order, 1928

ATTENTION is drawn to the publication of the Air Navigation (Amendment) (No. 2) Order, 1928, dated June 15, 1928. Copies are obtainable from H.M. Stationery Office, Adastral House, Kingsway, W.C.2, or through any bookseller.

Under this Order the fees chargeable in respect of applications for Certificates of Airworthiness for Type aircraft are amended as shown below with effect from the date of the Order:—

When the tare weight does not exceed 500 lbs., £25; 750 lbs., £50; 1,000 lbs., £60; 1,500 lbs., £70; 2,000 lbs., £80; 3,000 lbs., £88; 4,500 lbs., £100; 6,000 lbs., £112; 8,000 lbs., £128; 10,000 lbs., £144; 12,500 lbs., £160. For each additional 2,500 lbs., £15. (No 52 of 1928.)

on probation are confirmed in rank:—F. A. B. Fawsett (June 20); G. V. Kibblewhite (June 20); G. J. C. Paul (June 20); R. D. Crofton (June 30); P. G. Thomson (July 1).

The follg. Flying Officers are transferred from Class C. to Class A.:—G. Terrell (June 26); J. M. S. Taylor (June 18). Pilot Officer on probation M. B. Barclay is transferred from Class A.A. to Class C. (June 24).

The follg. Flying Officers resign their comms. (April 1):—G. R. Stafford, W. F. Shaylor, V. J. Hatton.

AUXILIARY AIR FORCE

General Duties Branch

No. 600 CITY OF LONDON (BOMBING) SQUADRON.—The follg. Pilot Officer to be Flying Officer:—G. de H. Vaizey (May 16).

ERRATA (see FLIGHT, July 5, 1928, p. 582):—

The name of Pilot Officer A. P. de Wouf de Wytt is as now described and not as stated in Gazette, June 26.

For "No. 601 (CITY OF LONDON) (BOMBING) SQDN," in Gazette, June 26, read "No. 601 (COUNTY OF LONDON) (BOMBING) SQDN."

ROYAL AIR FORCE INTELLIGENCE

Flying Training Sch., Grantham, 22.6.28. K. Maconochie, to R.A.F. Depot, Uxbridge, 4.5.28. C. G. M. Anderson, to R.A.F. Depot, Uxbridge, 3.6.28.

Pilot Officers: C. P. Barker, to No. 58 Sqdn., Worthy Down, 18.6.28. E. S. Bateman, D. Dickson, and W. R. Mouré Higgs, to No. 13 Sqdn., Andover, 18.6.28. M. G. Bircham, to No. 100 Sqdn., Bicester, 18.6.28. R. W. P. Collings, T. J. Davidson, and A. C. Pearson, to No. 39 Sqdn., Bircham Newton, 18.6.28. H. W. Duffey, D. G. P. Fitzpatrick, N. H. Fresson, M. R. Kelly, and W. P. J. Thomson, to No. 2 Sqdn., Manston, 18.6.28. F. G. Ferrier A. L. T. Naish, and R. W. A. Stroud, to No. 11 Sqdn., Netheravon, 18.6.28. T. L. Harrison, B. D. Nicholas, and A. M. Stevens, to No. 502 Sqdn., Aldergrove, 18.6.28. M. G. R. Harris and L. W. W. Modley, to No. 9 Sqdn., Manston, 18.6.28. A. T. C. Hazledine, to No. 10 Sqdn., Upper Heyford, 18.6.28. D. I. Stewart, to No. 99 Sqdn., Upper Heyford, 18.6.28. N. E. Whalley, to No. 207 Sqdn., Eastchurch, 18.6.28. M. M. Freeman, to R.A.F. Depot, Uxbridge, 4.6.28.



NEW COMPANIES REGISTERED

AERONAUTICAL FINANCE AND INVESTMENT TRUST, LTD., 61, Cheapside, E.C.2. Nominal capital £100, in 2s. shares. Objects: to develop, stimulate and finance the aeronautical industry and promote the advance of aeronautical science and research, etc. Directors, L. A. Wingfield and H. M. Whitehead, Solicitors, Wingfield, Halse and Trustram, 61, Cheapside, E.C.

BRITISH RUSSELL PARACHUTE CO., LTD., 423 and 423A, Edgware Road, Paddington, W.2.—Capital £15,000, in £1 shares. Acquiring from the Russell Parachute Co., Ltd., of Wilmington, Delaware, San Diego, California, U.S.A., inventions relating to parachutes and other aircraft accessories, manufacturers of and dealers in parachutes, aircraft and aircraft accessories, etc. First directors: C. P. Williams, M. Senst, F. H. Roberts.

MIDLAND AERO FLIGHTS, LTD.—Capital £2,000, in £1 shares. Proprietors of aeroplanes and aerial conveyances, for pleasure or commercial purposes, etc. First directors, H. Oldfield and H. D. Hands. Solicitor, W. Kentish, 31, Temple Row, Birmingham.

VICKERS (AVIATION). Capital £250,000, in £1 shares. Acquiring from Vickers, Ltd., that part of its undertaking carried on at Weybridge, of manufacturers of and dealers in airships and aircraft of all kinds, ship-builders, etc. Solicitors, Linklater and Paines, 2, Bond Court, Walbrook, E.C.



AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

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